**IT IS THE VENDOR'S RESPONSIBILITY TO CHECK FOR ADDENDUMS PRIOR TO SUBMITTING PROPOSALS**

# NOTICE TO BIDDERS
# SPECIFICATION NO. 07-200

The City of Lincoln, Nebraska intends to enter into a contract and invites you to submit a sealed bid for:

## Fire Station 12 Vehicle Exhaust Removal System Upgrade

Sealed bids will be received by the City of Lincoln, Nebraska on or before 12:00 noon Wednesday, June 27, 2007 in the office of the Purchasing Agent, Suite 200, K Street Complex, Southwest Wing, 440 South 8th Street, Lincoln, Nebraska 68508. Bids will be publicly opened and read at the K Street Complex.

Bids may be downloaded from the City's website at www.lincoln.ne.gov Keyword: Bid. Prospective submitters must monitor the bid listing for any addendums.

Bidders should take caution if U.S. mail or mail delivery services are used for the submission of bids. Mailing should be made in sufficient time for bids to arrive in the Purchasing Division, prior to the time and date specified above. Late bids will not be considered. **Fax or e-mail bids are not acceptable. Bid response must be in a sealed envelope.**

# PROPOSAL
# SPECIFICATION NO. 07-200

## BID OPENING TIME: 12:00 NOON
## DATE: Wednesday, June 27, 2007

The undersigned, having full knowledge of the requirements of the City of Lincoln for the below listed phases and the contract documents (which include Notice, Instructions, this Proposal, Specifications, Contract, and any and all addenda) and all other conditions of the Proposal, agrees to enter into a contract with the City the below listed fees for the performance of this Specification, complete in every respect, in strict accordance with the contract documents at and for fees listed below.

**ADDENDA RECEIPT:** The receipt of addenda to the specification numbers _____ through _____ are hereby acknowledged. Failure of any submitter to receive any addendum or interpretation of the specifications shall not relieve the submitter from any obligations specified in the request. All addenda shall become part of the final contract document.

## BIDDING SCHEDULE

Lump sum bid for Fire Station12 Vehicle Exhaust Removal System Upgrade $ _____

BID SECURITY REQUIRED: _____ YES
X NO

AFFIRMATIVE ACTION PROGRAM: Successful bidder will be required to comply with the provisions of the City's Affirmative Action Policy (Contract Compliance, Sec. 1.16). The Equal Opportunity Officer will determine compliance or non-compliance with the City's policy upon a complete and substantial review of successful bidder's equal opportunity policies, procedures and practices.

The undersigned signatory for the bidder represents and warrants that he has full and complete authority to submit this proposal to the City, and to enter into a contract if this proposal is accepted.

## RETURN 2 COMPLETE COPIES OF PROPOSAL AND SUPPORTING MATERIAL.
## MARK OUTSIDE OF BID ENVELOPE:
## SEALED BID FOR SPEC. 07-200
## *and your Company's Name*

| | |
|---|---|
| **COMPANY NAME** | **BY (Signature)** |
| **STREET ADDRESS or P.O. BOX** | **(Print Name)** |
| **CITY, STATE ZIP CODE** | **(Title)** |
| **TELEPHONE No. FAX No.** | **(Date)** |
| **E-MAIL ADDRESS** | **ESTIMATED DELIVERY DAYS** |

Bids may be inspected in the Purchasing Division during normal business hours **after** tabulation and review by a Purchasing Agent. Bid tabulations can be viewed on our website at: lincoln.ne.gov Keyword: **Bid** The Intent to Award will be listed on the website when a recommendation is received from the Department.

# INSTRUCTIONS TO BIDDERS

## CITY OF LINCOLN, NEBRASKA

**1. BIDDING PROCEDURE**

1.1 Bidder shall submit one (1) complete set of the bid documents and all supporting material, unless otherwise stipulated. All appropriate blanks shall be completed. Any interlineation, alteration or erasure on the specification document shall be initialed by the signer of the bid. Bidder shall not change the proposal form nor make additional stipulations on the specification document. Any amplified or qualifying information shall be on the bidder's letterhead and firmly attached to the specification document.

1.2 Bid prices shall be submitted on the Proposal Form included in the bid document.

1.3 Bidders may submit a bid on an "all or none" or "lump sum" basis, but should also submit a quotation on an item-by-item basis. Bidding documents shall be clearly marked indicating the kind of proposal being submitted.

1.4 Any person signing a bid for a firm, corporation, or other organization must show evidence of his authority so to bind such firm, corporation, or organization.

1.5 Bids received after the time and date established for receiving bids will be rejected.

1.6 If bidding on a Construction Contract, the City of Lincoln's Standard Specifications for Municipal Construction 2006 shall apply.

1.6.1 Bidders may obtain this document from the City's Design Engineering Division of Public Works & Utilities for a small fee.

1.6.2 Said document can be reviewed at Design Engineering or the Purchasing Division.

1.6.3 The Standard Conditions are available on the web site.
http://www.lincoln.ne.gov/city/pworks/engine/dconst/standard/stndspec/index.htm

**2. BIDDER'S SECURITY**

2.1 Bid security, as a guarantee of good faith, in the form of a certified check, cashier's check, or bidder's bond, may be required to be submitted with this bid document, as indicated on the Proposal Form.

2.2 If alternates are submitted, only one bid security will be required, provided the bid security is based on the amount of the highest gross bid.

2.3 Such bid security will be returned to the unsuccessful bidders when the award of bid is made.

2.4 Bid security will be returned to the successful bidder(s) as follows:

2.4.1 For single order bids with specified quantities: upon the delivery of all equipment or merchandise, and upon final acceptance by the City.

2.4.2 For all other contracts: upon approval by the City of the executed contract and bonds.

2.5 City shall have the right to retain the bid security of bidders to whom an award is being considered until either:

2.5.1 A contract has been executed and bonds have been furnished.

2.5.2 The specified time has elapsed so that the bids may be withdrawn.

2.5.3 All bids have been rejected.

2.6 Bid security will be forfeited to the City as full liquidated damages, but not as a penalty, for any of the following reasons, as pertains to this specification document:

2.6.1 If the bidder fails to deliver the equipment or merchandise in full compliance with the accepted proposal and specifications.

2.6.2 If the bidder fails or refuses to enter into a contract on forms provided by the City, and/or if the bidder fails to provide sufficient bonds or insurance within the time period as established in this specification document.

**3. BIDDER'S REPRESENTATION**

3.1 Each bidder by signing and submitting a bid, represents that the bidder has read and understands the specification documents, and the bid has been made in accordance therewith.

3.2 Each bidder for services further represents that the bidder has examined and is familiar with the local conditions under which the work is to be done and has correlated the observations with the requirements of the bid documents.

**4. CLARIFICATION OF SPECIFICATION DOCUMENTS**

4.1 Bidders shall promptly notify the Purchasing Agent of any ambiguity, inconsistency or error which they may discover upon examination of the specification documents.

4.2 Bidders desiring clarification or interpretation of the specification documents shall make a written request which must reach the Purchasing Agent at least five (5) calendar days prior to the date and time for receipt of bids.

4.3 Changes made to the specification documents will be made by written addenda to all known prospective bidders and posted on the City-County website at lincoln.ne.gov Keyword - Bid.

4.4 Oral interpretations or changes to the Specification Documents made in any other manner, will not be binding on the City; and bidders shall not rely upon such interpretations or changes.

**5. ADDENDA**

5.1 Addenda are written instruments issued by the City prior to the date for receipt of bids which modify or interpret the specification document by addition, deletion, clarification or correction.

5.2 Copies of addenda will be made available for inspection at the office of the Purchasing Agent and on the City-County website.

5.3 No addendum will be issued later than forty-eight (48) hours prior to the date and time for receipt of bids, except an addendum withdrawing the invitation to bid, or an addendum which includes postponement of the bid.

5.4 Bidders shall ascertain prior to submitting their bid that they have received all addenda issued, and they shall acknowledge receipt of addenda on the proposal form.

**6. INDEPENDENT PRICE DETERMINATION**

6.1 By signing and submitting this bid, the bidder certifies that the prices in this bid have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder prior to bid opening directly or indirectly to any other bidder or to any competitor; no attempt has been made, or will be made, by the bidder to induce any person or firm to submit, or not to submit, a bid for the purpose of restricting competition.

**7. ANTI-LOBBYING PROVISION**

7.1 During the period between the bid advertisement date and the contract award, bidders, including their agents and representatives, shall not lobby or promote their bid with any member of the City Council or City Staff except in the course of City-sponsored inquiries, briefings, interviews, or presentations, unless requested by the City.

**8. BRAND NAMES**

8.1 Wherever in the specifications or proposal form brand names, manufacturer, trade name, or catalog numbers are specified, it is for the purpose of establishing a grade or quality of material only; and the term "or equal" is deemed to follow.

8.2 It is the bidder's responsibility to identify any alternate items offered in the bid, and prove to the satisfaction of the City that said item is equal to, or better than, the product specified.

8.3 Bids for alternate items shall be stated in the appropriate brand on the proposal form, or if the proposal form does not contain blanks for alternates, bidder MUST attach to the specification documents on Company letterhead a statement identifying the manufacturer and brand name of each proposed alternate, plus a complete description of the alternate items including illustrations, performance test data and any other information necessary for an evaluation. The bidder must indicate any variances by item number from the specification document no matter how slight. Bidder must fully explain the variances from the specification document, since brochure information may not be sufficient.

8.4 If variations are not stated in the proposal, it will be assumed that the item being bid fully complies with the City's specifications.

**9. DEMONSTRATIONS/SAMPLES**

9.1 Bidders shall demonstrate the exact item(s) proposed within seven (7) calendar days from receipt of such request from the City.

9.2 Such demonstration can be at the City delivery location or a surrounding community.

9.3 If bidder does not have an item in the area, it will be at the bidder's expense to send appropriate City personnel to the nearest location to view and inspect proposed item(s).

9.4 If items are small and malleable, the bidder is proposing an alternate product, the bidder MUST supply a sample of the exact item. Samples will be returned at bidder's expense after receipt by the City of acceptable goods. Bidders must indicate how samples are to be returned.

**10. DELIVERY (Non-Construction)**

10.1 Each bidder shall state on his proposal form the date upon which he can make delivery of all equipment or merchandise.

10.2 The City reserves the right to cancel orders, or any part thereof, without obligation, if delivery is not made within the time(s) specified on the proposal form.

10.3 All bids shall be based upon **inside** delivery of the equipment/ merchandise F.O.B. the City at the location specified by the City, with all transportation charges paid.

10.4 At the time of delivery, a designated City of Lincoln employee will sign the invoice/packing slip. The signature will only indicate that the order has been received and the items actually delivered agree with the delivery invoice. This signature does not indicate all items met specifications, were received in good condition and/or that there is not possible hidden damage or shortages.

**11. WARRANTIES, GUARANTEES AND MAINTENANCE**

11.1 Copies of the following documents must accompany the bid proposal for all items being bid:

11.1.1 Manufacturer's warranties and/or guarantees.

11.1.2 Bidder's maintenance policies and associated costs.

11.2 As a minimum requirement of the City, the bidder will guarantee in writing that any defective components discovered within a one (1) year period after the date of acceptance shall be replaced at no expense to the City. Replacement parts of defective components shall be shipped at no cost to the City. Shipping costs for defective parts required to be returned to the bidder shall be paid by the bidder.

**12. ACCEPTANCE OF MATERIAL**

12.1 All components used in the manufacture or construction of materials, supplies and equipment, and all finished materials, shall be new, the latest make/model, of the best quality, and the highest grade workmanship.

12.2 Material delivered under this proposal shall remain the property of the bidder until:

12.2.1 A physical inspection and actual usage of this material is made and found to be acceptable to the City; and

12.2.2 Material is determined to be in full compliance with the specifications and accepted proposal.

12.3 In the event the delivered material is found to be defective or does not conform to the specification documents and accepted proposal, then the City reserves the right to cancel the order upon written notice to the bidder and return materials to the bidder at bidder's expense.

12.4 Successful bidder shall be required to furnish title to the material, free and clear of all liens and encumbrances, issued in the name of the City of Lincoln, Nebraska, as required by the specification documents or purchase orders.

12.5 Selling dealer's advertising decals, stickers or other signs shall not be affixed to equipment. Vehicle mud flaps shall be installed blank side out with no advertisements. Manufacturer's standard production forgings, stampings, nameplates and logos are acceptable.

**13. BID EVALUATION AND AWARD**

13.1 The signed bid proposal shall be considered an offer on the part of the bidder. Such offer shall be deemed accepted upon issuance by the City of purchase orders, contract award notifications, or other contract documents appropriate to the work.

13.2 No bid shall be modified or withdrawn for a period of ninety (90) calendar days after the time and date established for receiving bids, and each bidder so agrees in submitting the bid.

13.3 In case of a discrepancy between the unit prices and their extensions, the unit prices shall govern.

13.4 The bid will be awarded to the lowest responsible, responsive bidder whose proposal will be most advantageous to the City, and as the City deems will best serve it's requirements.

13.5 The City reserves the right to accept or reject any or all bids; to request rebids; to award bids item-by-item, with or without alternates, by groups, or "lump sum"; to waive minor irregularities in bids; such as shall best serve the requirements and interests of the City.

13.6 In order to determine if the Bidder has the experience, qualifications, resources and necessary attributes to provide the quality workmanship, materials and management required by the plans and specifications, the Bidder may be required to complete and submit additional information as deemed necessary by the City. Failure to provide the information requested to make this determination may be grounds for a declaration of non-responsive with respect to the Bidder.

13.7 The City reserves the right to reject irregular bids that contain unauthorized additions, conditions, alternate bids, or irregularities that make the Bid Proposal incomplete, indefinite or ambiguous.

13.8 Any governmental agency may piggy back on any contract entered into from this bid.

**14. INDEMNIFICATION**

14.1 The bidder shall indemnify and save harmless the City of Lincoln, Nebraska from and against all losses, claims, damages, and expenses, including, attorney's fees arising out of or resulting from the performance of the contract that results in bodily injury, sickness, disease, death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom and is caused in whole or in part by the Bidder, any subcontractor, any directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. This section will not require the Bidder to indemnify or hold harmless the City of Lincoln for any losses, claims damages, and expenses arising out of or resulting from the sole negligence of the City of Lincoln, Nebraska.

14.2 In any and all claims against the City or any of its members, officers or employees by an employee of the bidder, any subcontractor, anyone directly or indirectly employed by any of them or by anyone for whose acts made by any of them may be liable, the indemnification obligation under paragraph 13.1 shall not be limited in any way by any limitation of the amount or type of damages, compensation or benefits payable by or for the bidder or any subcontractor under worker's or workmen's compensation acts, disability benefit acts or other employee benefit acts.

**15. TERMS OF PAYMENT**

15.1 Unless stated otherwise, the City will begin processing payment within thirty (30) calendar days after all labor has been performed and all equipment or other merchandise has been delivered, and all such labor and equipment and other materials have met all contract specifications.

**16. LAWS**

16.1 The Laws of the State of Nebraska shall govern the rights, obligations, and remedies of the Parties under this proposal and any agreement reached as a result of this process.

16.2 Bidder agrees to abide by all applicable State and Federal laws and regulations concerning the handling and disclosure of private and confidential information concerning individuals and corporations as to inventions, copyrights, patents and patent rights.

**17. AFFIRMATIVE ACTION**

17.1 The City of Lincoln-Lancaster County Purchasing Division provides equal opportunity for all bidders and encourages minority businesses and women's business enterprises to participate in our bidding process.

**18. LIVING WAGE**

18.1 The bidders agree to pay all employees employed in the performance of this contract, a base wage of not less than the City Living Wage per section 2.81 of the Lincoln Municipal Code. This wage is subject to change every July.

**19. EXECUTION OF AGREEMENT**

19.1 Depending on the type of service provided, one of the following three (3) methods will be employed. The method applicable to this contract will be checked below:

____ a. This Contract shall consist of a **PURCHASE ORDER** and a copy of the suppliers signed bid (or referenced bid number) attached and that the same, in all particulars, becomes the agreement and contract between the parties hereto: that both parties thereby accept and agree to the terms and conditions of said bid documents, and that the parties are bound thereby and the compensation to be paid the Supplier is as set forth in the Supplier's Bid. Items not awarded, if any, have been deleted.

___ b. The contract shall consist of a **YEARLY AGREEMENT** and a copy of the suppliers signed bid attached and that the same, in all particulars, becomes the agreement and contract between the parties hereto. That both parties thereby accept and agree to the terms and conditions of said bid documents, and that the parties are bound thereby and the compensation to be paid the Supplier is as set forth in the Suppliers' Bid. Items not awarded, if any, have been deleted.

__X__ c. Three (3) copies of the **CONTRACT,** unless otherwise noted.

1. City will furnish three (3) copies of the Contract to the successful Bidder who shall prepare attachments as required. Insurance as evidenced by a Certificate of Insurance, surety bonds properly executed, and Agreement signed with the date of signature shall be attached.
2. The prepared documents shall be delivered to the City within 10 days (unless otherwise noted).
3. The City will sign the Contract Agreement, insert the date of signature at the beginning of the Contract Agreement, prepare an Executive Order to go the Mayor for signature.
4. Upon approval and signature from the Mayor, the City will return one copy to the Contractor.

# GENERAL CONDITIONS & REQUIREMENTS


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## I. DEFINITIONS AND TERMS

### A. GENERAL

The General Conditions and Requirements and contract stipulations may refer to conditions which will not be encountered in the performance of work included in this contract and which are not applicable thereto. Any requirements, provisions, or other stipulation of these General Conditions and Requirements which pertain to a non-existent condition and are not applicable to the work to be performed hereunder shall have no meaning in this contract.

The Special Provisions shall govern in case of any conflicts between the General Conditions and Requirements and the Special Provisions.

### B. ABBREVIATIONS

The following abbreviations, when appearing in the Contract Documents, shall be construed to be the same as their respective expressions:

| | | |
|---|---|---|
| AAP | - | Affirmative Action Plan |
| AASHTO | - | American Association of State Highway and Transportation Officials |
| ACI | - | American Concrete Institute |
| AISC | - | American Institute of Steel Construction |
| ANSI | - | American National Standards Institute |
| ASA | - | American Standards Association |
| ASTM | - | American Society for Testing and Materials |
| AWG | - | American Wire Gauge |
| AWS | - | American Welding Society |
| AWWA | - | American Water Works Association |
| EEO | - | Equal Employment Opportunity |
| FHWA | - | Federal Highway Administration |
| IMSA | - | International Municipal Signal Association |
| IPCEA | - | Insulated Power Cable Engineers Association |
| LES | - | Lincoln Electric System |
| LSP | - | Lincoln Standard Plan |
| MUTCD | - | Manual Uniform Traffic Control Devices |
| NDOR | - | Nebraska Department of Roads |
| NEC | - | National Electrical Code |
| NEMA | - | National Electrical Manufacturers Association |
| NESC | - | National Electrical Safety Code |
| OSHA | - | Occupational Safety and Health Administration |
| SSP | - | State Standard Plan |
| UL | - | Underwriters Laboratories |
| USASI | - | USA Standards Institute |

## C. DEFINITIONS

1. **Addendum** (Addenda). Additional documents, issued by the City to prospective Bidders prior to the closing date for receipt of bids, which are intended to change or clarify the original plans and/or specifications, i.e., additions, deletions, modifications, or explanations.

2. **Advertisement**. The public announcement, stating the time and place for receiving bids for the Work.

3. **Bid** shall mean the properly signed and guaranteed written offer of the Bidder to perform the Work. Bid shall include Proposals or other formal written offers to perform the Work.

4. **Bidder** shall mean any individual, entity, firm, partnership, or corporation formally submitting a proposal to perform the Work or to supply materials for the Work. Bidder shall include any of the same acting through an authorized agent or representative.

5. **Brand Name.** Wherever in the specifications or proposal form brand names, manufacturer, trade name, or catalog numbers are specified, it is for the purpose of establishing a grade or quality of material only; and the term "or equal" is deemed to follow.

6. **Calendar Days**. Every day shown on the calendar. (Saturdays, Sundays and Holidays included).

7. **Change Order** shall mean a written instrument the Contract Administrator issues and the Mayor and the Contractor approve to state the City and Contractor's agreement for a change in the Work. All Change Orders shall specify the method of payment, if any. All Change Orders shall specify adjustments in the Contract Sum and/or Contract Time, if any.

8. **City.** The City of Lincoln, Nebraska, and shall include the City's authorized representative.

9. **City Holiday.** A City Holiday shall be defined as those holidays observed by the City as authorized in Section 2.76.370 of the Lincoln Municipal Code.

10. **Claim** shall include a demand or assertion by the City or Contractor seeking an adjustment to or interpretation of Contract terms, payment, time or other matters related to the Contract. The party making the Claim shall substantiate any such Claim.

11. **Consultant** shall mean the designated architect or engineer the City employed, or design professional contracted to provide design and other professional services related to the project.

12. **Contract.** The written agreement between the City and the Contractor, containing all the covenants of that agreement. Contract Documents shall include the Contract, Conditions of the Contract (General, Supplementary and other conditions), Drawings, Specifications, addenda issued prior to execution of the Contract, other documents listed in the Contract and modifications or other agreements required to complete the work issued after execution of the Contract. Unless specifically excluded in the Contract, Contract Documents shall also include the bidding requirements, Advertisement, Instructions to Bidders, sample forms, Contractor's Bid and Addenda.

13. **Contract Administrator.** The Contract Administrator shall be the person designated by the Department Director responsible for the Project.

14. **Contract Bonds.** The approved forms of security, executed by the Contractor and his surety or sureties, guaranteeing complete execution of the contract and the payment of all legal debts pertaining to the contract.

15. **Contractor.** The individual, entity, firm, partnership, or corporation undertaking the execution of the Work under the terms of the Contract who, regardless of any of the contract terms, is always considered as an independent contractor.

16. **Contract Completion Date.** The calendar date stipulated in the contract by which the proposed work shall be complete.

17. **County.** Lancaster County, Nebraska.

18. **Easement.** A right to use or control property for a designated purpose.

19. **Engineer.** The City Engineer or his/her designee.

20. **Equipment.** All machinery, tools, supplies necessary for maintenance, and apparatus necessary for the construction of the Work.

21. **Extra Work.** An item of work not originally a part of the contract, but necessary for completion and/or execution of the contract.

22. **Final Completion.** The stage when the City determines that the Work has been totally completed in accordance with the terms and conditions of the Contract Documents.

23. **General Conditions.** Standard provisions for all City contracts. The City may delete or modify any of these standard provisions for a particular contract by indicating a change in the Special Provisions or in the bid document. Any bidder accepting a purchase order/contract issued by the City agrees that the provisions included within the Invitation for Bid shall prevail.

24. **Laboratory.** The City of Lincoln's Testing Laboratory or any other laboratory as may be designated by the Contract Administrator for the purpose of testing materials and/or work performed.

25. **Liquidated Damages.** The amount prescribed in the contract documents to be paid to the City by the Contractor, or to be deducted from any payments due to the Contractor, for each calendar day or working day, whichever is specified in the contract documents, beyond the stated completion date or any extension thereof. Liquidated damages will represent the agreed damages to the City and shall not be construed as a penalty.

26. **Lump Sum.** The total price of a group of items which is priced as a whole.

27. **Materials.** All components used in the Work, materials, supplies and equipment incorporated into the Work shall be new, the latest make/model, of the best quality, and the highest grade workmanship.

28. **Modification.** Any authorized written order the Contract Administrator issued for a minor change in the Work and shall be synonymous with Field Orders and/or Field Modifications.

29. **Notice to Proceed.** Written notice instructing the Contractor to proceed with the Work.

30. **Observer.** The Observer is an appointed agent of the Contract Administrator to inspect (or observe) all work done. The Observer is appointed for the benefit of the City and any inspections shall be for the benefit of the City.

31. **Plans.** The drawings, standard plans, profiles, typical cross sections and supplemental drawings which show the dimensions, locations, details, and character of the work to be performed. All such documents are considered a part of the contract documents, whether attached to the plans or separate.

32. **Project.** The total construction related to the Work provided by this Contract. The Project may include construction by the City or by separate contractors.

33. **Proposal.** The properly signed written (or electronic if authorized) offer of the Bidder to perform all the work.

34. **Retainage.** The amount of monies held by the City until the contract is successfully completed.

35. **Right-of-Way.** Land, property, or interest therein devoted to or acquired for the purposes of public roads or utilities.

36. **Site Supervisor**. Person s at the location of the work responsible for dircting such work in the Public Right of Way. The Department Director shall be responsible for the certification procedure necessary to approve personnel to supervise work in the Public Right of Way.

37. **Special Provisions.** Additions to or modifications of the standard specifications and supplemental specifications covering conditions peculiar to the work.

38. **Specifications.** Any written requirement for materials, equipment, construction systems, standards or workmanship for the Work, including performance of related services.

39. **Standard Specifications.** The officially adopted Standard Specifications City of Lincoln, Nebraska.

40. **Subcontractor.** An individual, entity, firm, partnership, or corporation to whom the Contractor sublets a portion of the work.

41. **Subsidiary.** Any item required in carrying out the duties and obligations imposed by the contract for which no direct pay will be allowed. The cost of subsidiary items will be included in those items for which payment is proposed.

42. **Substantial Completion** shall mean the stage when the City determines (according to the Contract Documents) that the Work or a designated portion thereof is sufficiently complete, and when the Contractor has secured all required occupancy permits, if any, so the City can occupy or use the Work for its intended use.

43. **Supplemental Specifications.** Specifications adopted subsequent to publication of the standard specifications which may add to, delete, or modify the standard specifications.

44. **Surety.** The individual, firm, or corporate body bound with and for the Contractor for the acceptable completion of the work and the contract, and for payment of all just claims arising therefrom.

45. **Utilities.** Overhead or underground wires, pipe lines, conduits, ducts, or structures, sewers or storm sewer drains owned, operated or maintained in or across a public right-of-way or private easement.

46. **Work** shall include the construction and services the Contract Documents require, whether completed or partially completed, and all other labor, materials, equipment and services necessary to fulfill the Contractor's obligations. Work may constitute the whole or a part of the Project.

## II. PROPOSAL REQUIREMENTS AND CONDITIONS

### A. EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK

Bidders shall inform themselves of the conditions under which the work is to be performed, concerning the site of the Work, the structure of the ground, obstacles which may be encountered and all other relevant matters concerning the work to be performed. Where test boring logs and/or reports indicating underground conditions are attached to the Contract Documents, such logs and/or reports shall be considered only for information and as indicative of conditions as observed at the

time and place indicated, and the City shall not be held responsible for any variance in conditions encountered at the time of actual construction.

It shall be the responsibility of the Contractor to satisfy himself by such methods as he deems necessary prior to the letting as to underground structures, underground utilities (both public and private), underground soil and rock formations, ground water, and obstacles to be encountered.

The Contractor to whom a contract is awarded will not be allowed any extra compensation by reason of any matter or thing concerning which he might fully have informed himself prior to the bidding.

The successful Contractor will be required to employ, so far as is possible, such methods and means in the carrying out of his work as will not cause any interruption or interference with any other Contractor.

The Bidder is expected to base his bid on materials and equipment which comply fully with the plans and specifications, and in the event he names in his bid materials or equipment which do not conform, he will be responsible for furnishing materials and equipment which fully conform at no change in his bid price.

Before submitting a proposal, each Contractor shall examine the complete specifications and plans, including all related documents contained herein.

## B. TYING BIDS

Bidders shall not tie their bids to any other proposal except as may be provided in the proposal form or by special provision.

## C. QUANTITIES

Bidders shall satisfy themselves as to the correctness of any quantities listed in the proposal form and shall not, after submission of their proposal, dispute such quantities, nor assert that there was any misunderstanding in regard to the nature or amount of work to be done.

The quantities on projects involving unit prices and materials to be furnished under this contract are approximate and are to be used only as a basis for estimating the probable cost of the Work and for comparing the proposals. The City may omit portions of the Work, to increase or decrease the quantities as deemed necessary or desirable, and the actual amount of Work to be done and material to be furnished may differ from the estimated quantities, and the basis for payment under this contract shall be the actual amount of Work and materials done.

## D. UNIT PRICES

On a lump sum or partial lump sum contract where it is anticipated that unforeseeable changes may occur in the construction covered by the lump sum portion of the bid and which will require more or less quantities than are indicated on the contract plans, the cost of said more or less quantities may be covered by supplemental unit bid prices in the proposal form. The City reserves the right to reject any or all such supplemental unit prices which it deems to be excessive or unreasonable. In the event of such rejection and subsequent need for said more or less work, the contract price shall be adjusted by change order in the manner described in these specifications.

In cases where any part or all of the bidding is to be received on a unit price basis, the quantities stated are not intended to govern. The quantities stated, on which unit prices are so invited, are approximate only and each Bidder will be required to make his own estimates of amounts and to calculate his unit price bid accordingly. Bids will be compared on the basis of the stated number of units in the proposal form. Such estimated quantities, while made from the best information available, are approximate only. Payment on the contract will be based on actual number of units installed on the completed work

## E. ALTERNATIVES

When provided in the proposal form, Bidders may bid on one or more alternatives at his own discretion unless otherwise directed in these specifications or in the Special Provisions.

## F. SUBCONTRACTORS

The Contractor shall notify in writing, the Contract Administrator of the names and addresses of the Subcontractors he proposes to use on the contract. The notification shall be submitted prior to the commencement of the subcontracted work. The Contract Administrator shall have the right to approve or disapprove the use of any Subcontractor. Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and the City. The Contractor agrees to be fully responsible to the City for the acts or omissions of his Subcontractors and of anyone employed directly or indirectly by him or them and this contract obligation shall be in addition to the liability imposed by law upon the Contractor.

The Contractor agrees to bind every Subcontractor (and every Subcontractor of a Subcontractor) by the terms of the Contract.

## G. CONSTRUCTION PERFORMANCE AND CONSTRUCTION PAYMENT BONDS

Within ten (10) days after the acceptance of the bid, the Contractor shall furnish, on a form acceptable to the City, a construction performance and construction payment Bond, in a sum not less than the Contract Sum, executed by the Contractor and by a corporate surety company authorized to transact business in the State of Nebraska. Such Bond shall be conditioned upon the faithful performance of all the

terms and conditions of the Contract Documents, including the holding harmless of the City from failure to do so, and including the making good of any and all guarantees that the Contract Documents may require. The Bond shall be further conditioned upon the payment of all laborers and material suppliers used in the performance of the Contract, including Insurance premiums and interest.

### H. FAILURE TO EXECUTE THE CONTRACT

**It is agreed by the Bidder that upon a failure to enter into the Contract and furnish the necessary Construction Performance and Construction Payment Bond, within ten (10) calendar days, the amount of the Bidder's security may, at the discretion of the City, become the property of the City and will be retained, as damages to the City.** The award of the Contract may then, at the discretion of the City, be made to the next lowest responsible bidder, or the Work may be rebid, or may constructed by the City in any legal manner.

## III. SCOPE OF WORK

### A. INTENT OF DOCUMENTS

The intent of the documents is to include all labor and materials except that which is specially designated to be supplied by others, all tools and equipment, and everything necessary for the proper execution of the Work. The Contractor shall perform all necessary and incidental work and furnish any such materials as fully as if they were particularly delineated or described in the contract.

The contractor shall bring to the attention of the Contract Administrator any conflicts between various parts of the Contract Documents, or questions pertaining to procedures, traffic control or material, for determination.

Special Provisions, supplementing or modifying the specifications, whether incorporated in or furnished by addendum to the Contract Documents, shall be considered an integral part of same. Said special provisions shall, supercede the specifications.

If the plans and specifications should be found to be contradictory in any part, the plans shall govern.

Materials or work described in words which, so applied, have known technical or trade meaning shall be held to refer to such recognized standards.

Figured dimensions on the plans shall be taken as correct but shall be checked by the Contractor before starting construction. Any errors, omissions, or discrepancies shall be brought to the attention of the Contract Administrator and the Contract Administrator's decision thereon shall be final. Correction of errors or omissions on the drawings or specifications may be made by the Contract Administrator when such correction is necessary for the proper execution of the work.

The Contract Administrator will furnish the Contractor, free of charge, up to five (5) original-size copies of drawings and specifications that the Contract Administrator deems necessary to carry out the work. The Contractor may purchase additional copies.

The Contractor may be furnished additional instructions and detail drawings by the Contract Administrator as necessary to carry out the work required by the Contract Documents. The additional drawings and instructions so supplied shall become a part of the Contract Documents. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions.

## B. EXTRA WORK

In the event portions of such Work are determined by the Contract Administrator to be covered by some of the various items for which there is a bid price or combinations of such items, the remaining portion of such work will be considered as extra work. Extra work also includes work specifically designated as extra work in the plans or specifications.

The Contractor shall do such extra work upon receipt of a written order from the Contract Administrator.

Extra work shall be paid for as determined by the Contract Administrator and shall be on one of the following bases:

1. Unit prices contained in the Contractor's original bid.

2. Supplemental unit prices agreed upon by the Contract Administrator and Contractor prior to authorization of the change.

3. An agreed lump sum.

4. The actual cost of labor, direct overhead, materials, supplies, equipment and other services required to complete the work so ordered. In addition, there may be added an amount, to be agreed upon but not to exceed fifteen percent of the actual cost of the work, to cover the cost of general overhead and profit.

5. If a Subcontractor does the work, there may be added an amount, to be agreed upon but not to exceed five percent of the Subcontractor's billing, to cover the cost of general overhead and profit.

It shall be expressly understood and hereby agreed to by the Contractor that no claim for extra work will be recognized by the City unless same has been authorized in writing by the Contract Administrator and unless claim for such added work has been filed by the Contractor prior to preparation of the final estimate. The claim should be filed within fourteen (14) days after the need for the extra work is recognized.

## C. CHANGES IN THE WORK

The City may, at any time as the need arises, order changes in the scope of the work to be performed or the materials to be furnished without invalidating the Contract. If such changes are minor and have no effect on the amount due or the time required to perform the work, they may be authorized by the Contract Administrator. The request for such minor changes shall be documented in writing by the Contract Administrator. If such changes require an increase or decrease in the amount due under the Contract or in the time required for performance of the Work, an equitable adjustment shall be authorized by written change order executed by the Mayor.

## D. ROCK EXCAVATION

Rock Excavation shall be excavation in solid rock formations in the original bed or well defined ledges more than twelve inches in thickness, or detached solid masses of stone more than one-half (½ ) cubic yard in volume which cannot be excavated, loosened or removed by any process other than by drilling or by the use of pneumatic equipment. No soft or disintegrated rock, or rock that has been broken or previously blasted, or broken stone in rock fill or elsewhere, will be classified as rock excavation.

Unless indicated in the proposal, no payment will be made for "Rock Excavation." The additional cost of rock excavation shall normally be considered subsidiary to and a part of the applicable Contract bid price.

## E. HAUL OR OVERHAUL

Unless specified in the proposal, no payment will be made for "Haul" or "Overhaul." The cost of hauling material to or from the work regardless of distance shall be considered subsidiary to and a part of the applicable Contract bid price.

## F. CLEAN UP

The Contractor shall at all times keep the site of the work free from accumulations of waste materials or rubbish caused by his employees or work, and at the completion of the work he shall remove all rubbish from and about the work and all tools, equipment, scaffolding and surplus materials and shall leave the site clean and ready for use.

All sewers, conduits, pipes and appurtenances, and all tanks, pump wells, chambers, buildings and other structures shall be kept clean during construction; and as the work or any part thereof approaches completion, the Contractor shall systematically and thoroughly clean and make any needed repairs to them. He shall furnish, at his own expense, suitable tools and labor for removing all water and cleaning out all dirt, mortar and foreign substances. The Contract Administrator will not approve the final estimate of any portion of the work until after Final Completion is achieved and the work found satisfactory. The City may remove or cause the removal of the rubbish and surplus materials and deduct the cost from the final estimate or charge the cost to the Contractor if the cleanup is not properly

performed by the Contractor within three (3) days of written notice from the Contract Administrator.

## G. STAKES AND MONUMENTS

The Contractor must carefully preserve bench marks, reference points, and stakes set by the Contract Administrator, and in case of their damage or destruction, the Contractor will be charged with the expense of their replacement, and he shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance. In the case of any permanent monuments or bench marks which of necessity must be removed or disturbed in the construction of the Work, the Contractor shall carefully protect and preserve the same until they can be properly referenced for relocation, and in case of damage or destruction, he will be charged with the expense of their replacement.

## H. ACCESS TO THE SITE OF WORK

The Work included in the Contract is in the public right-of-way or easements furnished by the City of Lincoln. The City will guarantee necessary access for the Contractor to carry on the work of his Contract. The Contractor will be permitted to use only as much of the right-of-way as shall be determined by the Contract Administrator for the Contractor to carry on his work.

## I. OWNERSHIP OF SALVAGED MATERIALS

Materials removed and salvaged in accordance with the plans, or as directed by the Contract Administrator, shall be the property of the City and the Contractor shall load, transport, unload, and neatly stockpile the materials at the location(s) designated in these specifications, in the special provisions, or as directed by the Contract Administrator. Salvaged materials damaged due to the Contractor's negligence will be replaced with new materials at no additional cost to the City or deducted from the final estimate by the Contract Administrator. The Contractor shall furnish salvage receipts to the Contract Administrator if required by these specifications.

## J. BORROW AND WASTE SITES

Unless borrow or waste sites are designated on the plans or specified in the special provisions, the Contractor shall select the site and the Contract Administrator shall approve the locations of such sites. These sites will be maintained by the contractor at no cost to the City.

## IV. CONTROL OF MATERIALS

### A. MATERIAL STORAGE

The Contractor shall store all material under the general supervision and direction of the Contract Administrator.

The Contractor shall store all Materials to preserve their quality and fitness for the Work and to facilitate inspection.

The Contract Administrator may, when needed, order the Contractor to store Materials under cover or on platforms or as the Contract Administrator otherwise reasonably requires to protect the same from damage.

Materials from different sources of supply shall not be stored in the same stockpile unless approved by the Contract Administrator.

### B. TESTS AND SAMPLES

The Contractor shall furnish, at no expense to the City, such samples of materials as may be required by the Contract Administrator for testing. Materials having the same character, quality, and grading as the approved samples will be acceptable for the particular use for which they are intended. Samples shall be accompanied by a statement giving the type of materials, name of the producer, batch number, date, and location of the plant. The City will provide for the initial testing of materials at no expense to the Contractor. Any expense for retesting, required to establish the quality or acceptability of the materials in question shall be borne by the Contractor.

The City reserves the right to retest all materials, prior to incorporation into the Work. The City may then reject all materials that, when retested, do not comply with the Contract Documents.

### C. MATERIALS AND WORKMANSHIP

Unless otherwise stipulated in the specifications, all workmanship, equipment, materials, and articles incorporated in the work covered by this Contract are to be new and of the best grade of their respective kinds for the purpose. Before placing orders for equipment, the Contractor shall furnish to the Contract Administrator for his approval the name of the manufacturer of machinery, mechanical and other equipment, which he contemplates installing, together with their performance capacities and other pertinent information.

If not otherwise provided, the performance called for in this Contract shall be furnished and performed in accordance with well-known established practices and standards recognized by architects, engineers, and the trade. Materials installed or used without approval shall be at the risk of subsequent rejection.

No material of any kind shall be installed in the project until the Contract Administrator verifies the materials are in compliance with the contract documents.

Any materials or workmanship found at any time to be defective shall be remedied at once regardless of previous inspections.

All materials not conforming to the specifications shall be considered as defective, and all defective material, whether in place or not, shall be rejected, and unless remedied shall be removed from the site of the Work at the Contractor's expense. Rejected material which has been reconditioned or corrected so that it satisfactorily meets the Specifications shall not be used without written approval of the Contract Administrator.

At any time during the course of a project, when, in the opinion of the Contract Administrator, provisions of the contract documents are being violated by the Contractor or his employees, the Contract Administrator shall have the right and authority to order all construction to cease or material to be removed, until arrangements satisfactory to the Contract Administrator are made by the Contractor for resumption of the work in compliance with the provisions of the Contract.

## D. ALTERATIONS AND SUBSTITUTIONS

The Contract Administrator shall have the right to alter and modify the plans and specifications, thus making specific changes in the Work. If such changes diminish the amount of Work, the Contractor shall not file any claim for anticipated profit from such loss of Work. If such changes increase the amount of Work, such increase shall be made by Modification to the Contract.

Whenever the drawings or specifications identify a materials, article, or piece of equipment by brand name or catalog number, such identification shall define performance, quality level, or other salient requirements. The Contract Administrator may consider other products of equal performance, capacity, quality and function upon the Contractor's written substitution request. Otherwise, the Contractor shall use the identified goods, unless the Contract Administrator approves such request for substitution in writing. Upon any substitution of lesser priced goods, the Contract Administrator shall prepare a Modification deducting any resulting price differential from the Contract Sum. Otherwise, the Contractor shall provide any incidental changes or extra component parts required to accommodate the substitute without a change in the Contract Sum or Contract Time. The Contractor guarantee that approved substitutes will not effect major changes in the function or general design.

## E. MATERIALS SUPPLIED BY THE CITY

Material or equipment furnished by the City for installation by the Contractor will be furnished in good condition and ready for installation. This material or equipment shall be picked up by the Contractor at a location within the City of Lincoln designated by the Contract Administrator.

Excess materials supplied by the City shall be returned by the Contractor to the point of receipt. The Contractor shall be issued a receipt verifying condition and measures of material returned. Materials damaged by the Contractor will not be accepted by the City and the Contractor shall be responsible for the cost or replacement of any such materials.

## F. HAZARDOUS ENVIRONMENTAL CONDITIONS

The Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Document to be within the scope of the Work. The Contractor shall be responsible for a Hazardous Environmental Condition created with any materials or equipment brought to the Site by the Contractor, Subcontractors, Suppliers, or anyone else for whom the Contractor is responsible.

If the Contractor encounters a Hazardous Environmental Condition or if the Contractor or anyone for whom the Contractor is responsible creates a Hazardous Environmental Condition, the Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby; and (iii) notify the Contract Administrator, AND any regulatory agency required by law. The Contract Administrator shall promptly determine the necessity for the City to retain a qualified expert to evaluate such conditions or take corrective action, if any.

The Contractor shall be responsible for any and all civil or criminal penalties, fines, damages, or other charges imposed by any regulatory agency or court for sewage discharges that are in violation of applicable statutes and laws and that are a result, direct or indirect, of work performed under this Contract. The Contractor shall also be responsible for reimbursement to the City for administration, reporting, and tracking expenses required as a result of any spill event. In the event the regulatory agency or court imposes a probationary period, the Contractor shall post bond for the probationary period to ensure that all such costs are reimbursed to the City. This responsibility shall apply whether penalties are imposed directly on the Contractor or any of its subcontractors, or the City of Lincoln. The Contractor shall defend and indemnify the City against such penalties. Regulatory agencies may include, but are not limited to, the Department of Environmental Quality and the US EPA.

# V. CONTROL OF THE WORK

## A. AUTHORITY OF THE CONTRACT ADMINISTRATOR

The Contract Administrator in this Contract is acting as an agent of the City during the construction period. The Contract Administrator shall decide questions which may arise as to quality and acceptability of materials furnished and work performed. The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality materials, workmanship, and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.

The Contract Administrator will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety, except that those procedures specifically called for in the Contract Documents shall be strictly followed.

The Contract Administrator shall decide all questions which may arise as to Contract fulfillment on the part of the Contractor and the Contract Administrator's decisions thereon shall be final and conclusive. Such determination shall be a condition precedent to the right of the Contractor to receive any payments hereunder.

The Contract Administrator will have the authority to suspend the work wholly or in part due to the failure of the Contractor to correct conditions unsafe to the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for unsuitable weather; for conditions considered unsuitable for the prosecution of the work; or for any other reason deemed to be in the public interest, for such periods of time as the Contract Administrator deems necessary.

## B. AUTHORITY OF THE OBSERVER

The Observer is an appointed agent of the Contract Administrator to inspect all work done. The Observer will keep the Contract Administrator informed as to the progress of the work and the manner in which it is being done. Such inspection may extend to any or all parts of the work and materials furnished, but the Observer will not be authorized to revoke, alter, enlarge, or relax the provisions of these specifications. The Observer is appointed for the benefit of the City and any inspections shall be for the benefit of the City. The presence of the Observer shall not be used or construed as a waiver of any of the Contractor's obligations pursuant to the contract. Failure of an Observer to call the attention of the Contractor to faulty work or lack of compliance with the plans or specifications shall not constitute acceptance of said work.

1. The Observer shall be authorized to:

    a. Call the Contractor's attention to work or materials that do not conform to the contract.

    b. Reject materials until the Contract Administrator is notified and decides the questions at issue.

2. The Observer shall not be authorized to:

    a. Revoke, alter, enlarge, or relax the provisions of the Contract.

    b. Approve or accept any portion of the completed project.

    c. Act as foreperson or perform any duties for the Contractor.

## C. PRE-CONSTRUCTION AND PROGRESS CONFERENCE

Upon receipt of notification from the Contract Administrator, the Contractor or the Contractor's authorized representative shall, at no cost to the City, appear at a location and time designated by the Contract Administrator for the purpose of discussing pre-construction scheduling, traffic control procedure or methods, and project progress during construction. The Contractor or the Contractor's authorized representative shall provide, at no cost to the City, any data sheets, construction schedules, or other information deemed necessary by the Contract Administrator.

## D. PROJECT COORDINATION

Whenever prosecution of work under the contract involves coordination and cooperation among various agencies, such as utility companies and other City departments, subcontractors and other contractors, the Contractor shall make every effort to coordinate his work with that of said agencies, in order to minimize any conflicts which may arise and to provide the minimum of inconvenience to all parties involved.

Street reconstruction, excavation, or maintenance work within the parking-metered district, which may involve the use of metered parking stall space will require that the meter be hooded or removed by the City. The Contractor shall notify the Traffic Operations Section at least forty-eight (48) hours prior to the time which the parking space or spaces will be occupied.

Prior to any underground work or excavation of any kind, the Contractor shall notify the appropriate agencies and owners, including the One-Call Office, and shall allow personnel access to the site of the work in order to locate any underground facilities.

## E. INSPECTION TESTING AND CORRECTING WORK

The Contractor shall conduct or arrange for any tests, inspections and approvals of portions of the Work required by the Contract Documents, ordinances, rules, regulations or orders of public authorities having jurisdiction at appropriate times. All testing shall be prompt to avoid unreasonable delay in the Work. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the City, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall secure all required Certificates of testing, inspection or approval unless the Contract Documents require otherwise. The Contractor shall promptly deliver such Certificates to the Contract Administrator.

If the City or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included in the Contract Documents, the City shall instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the City. The City shall bear such costs except as provided in this section. If such testing or inspection, reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Contract Administrator's services and expenses.

If a portion of the Work has been covered that the Contract Administrator has not specifically requested to observe prior to its being covered, the Contract Administrator may request to see such Work. Upon such request, the Contractor shall uncover the specified Work. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs. If such Work is in accordance with the Contract Documents, the City shall pay such costs.

## F. CORRECTING WORK

The Contractor shall promptly correct Work rejected by the Contract Administrator or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Contract Administrator's services and expenses made necessary thereby. The Contractor shall remove immediately from the site portions of the Work that are not in accordance with the requirements of the Contract Documents.

If the Contractor fails to correct non-conforming Work within a reasonable time, fixed by written notice from the Contract Administrator, the City may correct it in accordance with the Contract Documents. If the Contractor does not proceed with correction of such non-conforming Work, the City may remove it and store the salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice the City may sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages owed by the Contractor, including compensation for the Contract Administrator's services and expenses made necessary thereby. If such proceeds of sale do not cover costs owed by the Contractor, the City shall automatically reduce the Contract Sum by the deficiency. If the remaining contract amounts are not sufficient to cover such costs, the Contractor shall pay the difference to the City.

The Contractor shall bear the cost of correcting any damages caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

If the City elects in writing to accept Work that is not in accordance with the requirements of the Contract Documents, the City may do so instead of requiring its removal and correction. Upon such election, the City and Contractor shall reduce the Contract Sum as appropriate and equitable. The City and Contractor shall make such adjustment whether or not the City has made final payment under the Contract Documents. The Contractor shall pay the difference, if any, to the City within 10 days from such adjustment.

## G. CONTRACTOR'S USE OF PUBLIC AND PRIVATE UTILITIES

The Contractor will be responsible for arrangements for all temporary service connections for various utilities and is responsible for all necessary payments to the various utility companies for such temporary services. The City may provide a Contractor with a method or process for reimbursement of certain utility payments.

Prior to the use of any City water from a fire hydrant, the Contractor shall take out the necessary permit for a hydrant meter and valve from the Lincoln Water System.

The Contractor shall pay the permit fees which are established by the Lincoln Water System for the installation or moving of hydrant meters and valves.

The Contractor shall not operate the hydrant, but shall use the exterior valve to control the flow of water. The Contractor shall be liable for any damage to the meter and valve.

### H. SHOP DRAWINGS

The Contractor, as soon as possible, shall submit to the Contract Administrator all shop or other drawings and schedules required for the Work, including those pertaining to structural and reinforcing steel. The need for more than one resubmittal, or any other delay in obtaining Contract Administrator's review of submittals will not entitle the Contractor to an extension of the Contract time. The Contractor shall make any corrections in the drawings required by the Contract Administrator and resubmit the same without delay. Catalog sheets or other descriptive data shall be furnished on all equipment to be installed. Such material shall be in sufficient detail to accurately describe the materials and method of operation of the equipment.

At least three (3) final copies of all shop or setting drawings shall be submitted to the Contract Administrator, who, after checking, will retain two (2) copies and return the other copy to the Contractor. The Contract Administrator's approval of shop drawings of equipment and material shall extend only to determining the conformity of such equipment and materials with the general features of the design drawings prepared by the Contract Administrator. It shall be the responsibility of the Contractor to determine the correctness of all dimensions and minor details of such equipment and materials so that, when incorporated in the work, correct operation will result. Approval by the Contract Administrator will not relieve the Contractor of any responsibility for the proper performance or functioning of the completed project.

The Contractor shall obtain the Contract Administrator's approval before beginning any portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals.

### I. OTHER CONTRACTS

The City may require the Contractor to coordinate with other contractors at or near the Work site.

## VI. LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

### A. PROTECTION FROM LOSS

The Contractor shall protect all parts of the Work from loss by theft or otherwise, and shall assume all risks for repair and replacement for damage to the same, whether caused by lightning, fire, wind, water, theft, vandalism, or other causes, until completion and acceptance of the work.

## B. ASSUMPTION OF LIABILITY AND INDEMNIFICATION

The Contractor shall indemnify and save harmless the City of Lincoln, Nebraska from and against all losses, claims, damages, and expenses, including attorney's fees, arising out of or resulting from the performance of the contract that results in bodily injury, sickness, disease, death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom and is caused in whole or in part by the Contractor, any subcontractor, any directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. This section will not require the Contractor to indemnify or hold harmless the City of Lincoln for any losses, claims, damages, and expenses arising out of or resulting from the sole negligence of the City of Lincoln, Nebraska.

## C. CONTRACTOR'S INSURANCE

The Contractor shall not commence work under this Contract until he has obtained all insurance required under this article or as may be required elsewhere in the Contract Documents, until such insurance has been approved by the City. The Contractor shall not allow any Subcontractor to commence work on his subcontract until all similar insurance required of the Subcontractor has been so obtained with the amount specified in the Contract Document.

## D. PATENTED DEVICES, MATERIALS, AND PROCESSES

It is mutually understood and agreed that, without exception, Contract prices are to include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. It is the intent that whenever the Contractor is required or desires to use any design device, material, or process covered by letters, patent, or copyright, the right for such use shall be provided for by legal agreement with the patentee or owner, however, whether or not such an agreement is made as noted, the Contractor and the surety in all cases shall indemnify and save harmless the City from any and all claims for infringement by reason of the use of any such patented design, device, material, or process, or any trademark or copyright, in connection with the work agreed to be performed under the contract, and shall indemnify the City for any costs, expenses, and damages which it may be obligated to pay, by reason of any such infringement, at any time during the prosecution or after the completion of the work.

## E. INDEPENDENT CONTRACTORS

The City is interested only in the results obtained and the Contractor shall perform as an independent contractor with the sole control of the manner and means of performing the Work required under the Contract. The Contractor shall complete the Contract according to its own means and methods of work, which shall be in the exclusive charge and control of the Contractor, and which shall not be subject to control or supervision by the City except as to the results of the Work. The Contractor is, for all purposes arising out of the Contract, an independent contractor, and the Contractor or any Subcontractor, agent, employee or representative and employees or agents of any of them shall not be deemed an employee of the City. It is expressly understood and agreed that the Contractor shall in no manner be

entitled to any benefits to which the City's employees are entitled including, but not limited to, overtime, any retirement benefits, workers' compensation benefits and injury leave, or other benefits.

## F. PROTECTION OF WORK, PROPERTY, AND PERSONS

The Contractor shall protect and support all water, sewer, gas and other pipes and structures; telephones, cable, fiber optic or electric power lines; all railroad tracks, pavement, building walls, fences, utilities, or other properties, public or private, which may be damaged during the execution of this work. During all operations under the Contract, the Contractor shall carefully protect all trees, shrubbery, sod, plantings, etc., not designated to be removed as part of the work of the Contract, and he shall assume full responsibility for their damage or destruction.

In the event of any damage or injury to any property as a result of the work under this contract, the Contractor shall promptly have the same repaired at his expense to the satisfaction of the Contract Administrator. He shall take all reasonable and proper precautions to protect persons, and property from injury, and any damage. The Contractor must keep fire hydrants and inlets free from unnecessary encumbrance.

Existing sub-surface structures in the vicinity of the work to be done are shown on the plans in accordance with the best information available to the City. The City does not, however, guarantee the completeness or accuracy of this information. Any delay or extra cost to the Contractor due to encountering structures differing from those shown on the plans shall not constitute a claim for extra payment. The location of house sewer connections, water services, underground sprinklers and gas services are not definitely known and no attempt is made, therefore, to indicate such connections and services on the plans.

## G. COMPLIANCE WITH LAWS

The Contractor and his employees shall comply with all Federal, State and local laws and regulations, and shall require all subcontractors and all their employees likewise to comply.

## H. FAIR EMPLOYMENT PRACTICES

The Contractor and the Subcontractors shall not discriminate against any employee or applicant for employment, to be employed in the performance of the Contract, with respect to his hire, tenure, terms, conditions, or privileges of employment, because of race, color, religion, sex, disability, age, ancestry, marital status or national origin, pursuant to the requirements of Section 48-1122, Nebraska Reissue Revised Statutes and Section 48 as amended.

## I. FAIR LABOR STANDARDS

The Contractor and the Subcontractors shall maintain Fair Labor Standards in the performance of the Contract, as required by Nebraska Revised Statutes § 73-102 through 104 as amended.

## J. EQUAL EMPLOYMENT AND LIVING WAGE

Each bidder shall comply with the requirements of Lincoln Municipal Code Title 11, Equal Opportunity, in the performance of the Work under the Contract. Failure of the successful bidder to abide by the requirements during the contract period shall be deemed to be a substantial and willful violation of the requirements of the Contract Documents, and may result in termination of the Contract.

This contract is subject to the Living Wage Ordinance of the Lincoln Municipal Code. The Ordinance requires that, unless specific exemptions apply or a waiver is granted, all employers (as defined) under service contracts shall provide payment of a minimum living wage to employees. Such rate shall be adjusted annually pursuant to the terms of the Lincoln Living Wage Ordinance of the Lincoln Municipal Code.

Under the provisions of the Lincoln Living Wage Ordinance, the City shall have the authority, under appropriate circumstances, to terminate this contract and to seek other remedies as set forth therein, for violations of the Ordinance.

## K. UNEMPLOYMENT CONTRIBUTION

The Contractor and Subcontractors shall pay to the Unemployment Fund of the State of Nebraska unemployment contributions and interest due under the provisions of Section 48-601 through 48-671, Nebraska Reissue Revised Statutes of 1943, on wages paid to individuals employed in the performance of the Contract.

## L. ASSIGNMENT OF CONTRACTS

No assignment by the Contractor of any contract, or any part thereof, or of the funds to be received thereunder by the Contractor, will be recognized unless such assignment has had the written approval of the Mayor and the Surety has been given due notice of such assignment and has furnished written consent thereto.

Such written approval by the Mayor shall not relieve the Contractor of the obligations incurred by him under the terms of this contract. In addition to the usual recitals in assignment contracts, the following language must be set forth:

> "It is agreed that the funds to be paid to the assignee under this assignment are subject to a prior lien for services rendered or materials supplied for the performance of the work called for in said Contract in favor of all persons, firms, or corporations rendering such services or supplying such materials."

## M. PERMITS AND LICENSES

Permits and licenses necessary for prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated. Permits, licenses, easements (both permanent and temporary), and rights-of-way of a permanent nature shall be secured and paid for by the City. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are in variance with any laws, ordinance, rules or regulations, he shall promptly notify the Contract Administrator in writing and any necessary changes shall be accomplished as provided in these specifications.

## N. PAYMENT OF BILLS

The Contractor shall pay and shall indemnify and save harmless the City for all labor, materials, equipment, and supplies actually used or rented in the performance of the work, including all insurance premiums on insurance required by the Contract Documents, and shall furnish to the City, when required, satisfactory evidence that all persons, firms, or organizations who have done work or furnished materials, equipment, or supplies in the performance of the Work, or have provided any such required insurance, have been fully paid or satisfactorily secured. In case such evidence is not furnished, an amount necessary or sufficient shall be retained from any amounts which may be due the Contractor to meet the claims of the persons, firms, or organizations aforesaid, in addition to any other monies which are to be retained as otherwise specified in the Contract Documents, until the liabilities aforesaid shall be fully discharged or satisfactorily secured.

## O. STANDARD MANUFACTURER

Wherever the terms "standard," "recognized," or "reputable" manufacturer are used, they shall be construed as meaning manufacturers who have been engaged in the business of fabricating materials, equipment, or supplies of the nature called for by the specifications for a reasonable period of time prior to the date set for opening

bids, and who can demonstrate to the satisfaction of the Contract Administrator that said manufacturer has successfully installed equipment, materials, or supplies of the type proposed to be furnished in at least three instances, and that the performance of such materials, equipment, or supplies has been satisfactory. Manufacturers who have been engaged in the business of manufacturing said materials, equipment, or supplies for a period of over twelve (12) months prior to the date fixed for opening bids shall, prima facie, be deemed to have been engaged in such business for a reasonable length of time.

## P. "OR EQUAL" CLAUSE

Whenever, in any section of the Contract Documents, plans, or specifications, any article, material, or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or approved equal," if not inserted, shall be implied. The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality desired, and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design, and efficiency. The City shall determine the acceptability of articles, materials, or equipment proposed as equals.

## Q. SANITARY CONVENIENCES

The Contractor shall supply and maintain adequate sanitary facilities by providing temporary and portable units on the work site to comply with current City-County Health Department and State Department of Health requirements and regulations. These facilities are to be made available for the Contractor's employees and project personnel.

## R. EXECUTIVE ORDERS

Any work to be performed within the limits of, crossing over, or intended to occupy the public right-of-way shall be guided and governed by these standard specifications and general conditions. The Director of Public Works and Utilities reserves the right to approve or disapprove any such work performed within the public right-of-way, even though, as in the case of certain Executive Orders, the City is not a party to the contract. While the City may not actually be party to the contract, this fact shall not in any way relieve the Contractor from wholly satisfying all the standards and conditions set forth in these specifications.

## S. PURCHASING AGENT APPOINTMENT AND EXEMPT SALES CERTIFICATE

The Contractor performing the work for the City of Lincoln, Nebraska, except for work performed for the Lincoln Water System, will be issued a Purchasing Agent Appointment and Exempt Sales Certificate signed by the Purchasing Agent of the City. It is to be used by the Contractor and his Subcontractors when purchasing tangible personal property to be actually incorporated into the Contract work, including materials incidental but necessary to the performance of the Contract, provided that such materials are actually incorporated into the contract work. It does not apply to either (1) the purchase of materials to be used but not incorporated into

the contract work, including but not limited to form lumber, scaffolding, etc., or (2) the purchase or rental of machinery, equipment, or tools owned or leased by the Contractor or his Subcontractors and used in performing the Contract work.

Purchases qualifying as aforesaid shall be considered as being made by the City. The City shall be obligated to the vendor for the purchase price, but the Contractor or Subcontractor, as the case may be, shall handle all payments therefore on behalf of the City. The vendor shall agree to make demand or claim for payment of the purchase price from the City by submitting an invoice to the Contractor or Subcontractor. Title to all materials and supplies so qualifying shall vest in the City directly from the vendor. Regardless of the method of payment, title shall vest immediately in the City. The Contractor or Subcontractor shall not acquire title to any materials incorporated into the project. All invoices shall bear the Contractor's or Subcontractor's name as agent for the City.

The Contractor may reproduce copies of this Contract Agreement and of the original of the aforesaid Appointment and Certificate to furnish to his suppliers on each invoice or order. The Contractor shall enter the supplier's (the vendor's) name and address, the date, the invoice or order number, a description of the items, and the amount, in the spaces provided and shall sign the certificate on the line provided for the "Purchaser's Agent."

The Contractor shall provide each Subcontractor with a copy of this Contract Agreement and of said Appointment and Certificate, and on each Subcontractor's copy of said Appointment and Certificate the Contractor shall add the Subcontractor's name and address in the places provided therefor. Each Subcontractor is hereby given the authority to reproduce copies of the copy of said Appointment and Certificate thus provided him by the Contractor and to furnish the same to his (the Subcontractor's) suppliers on each invoice or order; and the Subcontractor shall complete and sign the same for his purchases in like manner as above set forth for the Contractor.

## T. WEED CONTROL

During the construction of the project the Contractor shall control all vegetation so as to comply with City regulations. The areas to be controlled are the public rights-of-way within the project limits and the easements acquired for the construction or any areas (so designated on plans or specifications) as deemed necessary by the Contract Administrator.

No direct payment shall be made for this work, but shall be considered subsidiary to other items of work for which direct payment is made.

## VII. PROSECUTION AND PROGRESS OF WORK

### A. NOTIFICATION

The Contractor shall keep the Contract Administrator informed, forty-eight (48) hours in advance, of the times and places at which he intends to work in order that inspections may be arranged, lines and grades may be furnished, detours established if needed, and necessary measurements made with the minimum of inconvenience to the Contract Administrator and delay to the Contractor.

Notice of intention to start work in a new location or to resume work on a job which has been suspended temporarily for any reason must be given to the Contract Administrator at least forty-eight (48) hours in advance unless otherwise approved by the Contract Administrator.

For any work that requires construction within the public right-of-way, forty-eight (48) hours advance notice shall be given to the Contract Administrator and the City Traffic Engineer. For any work that requires closing of any portion of a street, permission shall be obtained from the City Traffic Engineer, with copies provided to the Contract Administrator.

Street reconstruction, excavation, or maintenance work which may involve the parking metered district may involve the use of the metered parking stall space will require that the meter be hooded or removed by the Traffic Engineer. The Contractor shall give at least forty-eight (48) hours advance notice of the date and time to the City Traffic Engineer.

The Contractor is responsible for notifying the City Testing Lab to arrange for any necessary testing in advance of contemplated work. The Contractor shall give at least forty-eight (48) hours advance notice of the date and time to the City Testing Lab.

Any work done without proper notification or without being properly located and established by base lines, offset stakes, bench marks, or other basic reference points, may be ordered removed and replaced at the Contractor's expense.

### B. COMMENCEMENT

The work under the Contract shall begin after the date stated in the written Notice to Proceed. Such work shall be completed and accepted within the limit and before the completion date stated in the Contract Agreement.

The Contractor shall begin the work at such locations and proceed with the work conforming to such schedules as may be approved by the Contract Administrator.

## C. DELAYS

The Contractor shall not be entitled to any claims against the City for damages for hindrances or delays, from any cause whatsoever, in the progress of the work or any portion thereof.

## D. SUPERVISION AND DISCIPLINE BY CONTRACTOR

The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and shall have control over construction means, methods, techniques, sequences, coordination, and procedures for all portions of the Work.

The Contractor shall be responsible to the City for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with Contractor.

## E. EXTENSION OF TIME

The time for completion of the work may be extended upon written request from the Contractor to the Contract Administrator, provided the request is based on delays or suspensions that are no fault of the Contractor; and such delays shall include, but not be limited to, acts or neglects of the City or others performing additional work, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God; or the request is based upon a change in the scope of the work which has been approved by the Contract Administrator. The length of such extension, if approved by the Contract Administrator, shall be the equivalent number of working days, if the contract time is expressed in working days, or the equivalent number of calendar days, if the contract time is expressed in calendar days or is expressed as a specific completion date, during which the work was suspended, or in proportion to the amount of extra work compared to the amount of the original Contract. Requests for extensions in completion dates shall be made within twenty (20) days of occurrence.

Certain delays will not be justified for extension of time. Such delays, shall include, but not limited to:

1. Delays caused by a Subcontractor.
2. Inadequate construction force.
3. Failure to place orders for equipment or materials in a timely manner.
4. Normal periods of adverse weather.
5. Subsurface or otherwise concealed subsurface conditions which are not unusual.

## F. LIQUIDATED DAMAGES

If the Contractor fails to timely complete the Work according to the Contract (allowing for any approved extensions of time), the Contractor shall pay Liquidated Damages for each day that the work remains incomplete. The City shall deduct the amount of Liquidated Damages due from the money due the Contractor prior to final payment. If the remaining amount due the Contractor is less than the total amount of Liquidated Damages, the Contractor shall pay the difference within 10 days. If the Contractor fails to pay such difference, the City shall have the right to recover the difference from the Contractor or his Surety.

Unless specifically amended or modified by special provision, the daily amount of the Liquidated Damages shall be as follows:

1. Contract Sum up to and including $100,000:
   $300/day

2. Contract Sum more than $100,000 up to and including $500,000:
   $500/day

3. Contract Sum more than $500,000 up to and including $1,000,000:
   $750/day.

4. Contract Sum more than $1,000,000:
   $1,000 /day.

The Liquidated Damages provided herein are not considered punitive. The Contractor agrees that such damages are predetermined and reasonable amounts to compensate for the detriment to the public and to defray expenses incurred by the City due to the delay in the completion of the Work.

## G. TERMINATION FOR CAUSE

1. The City may terminate the Contract if the Contractor:

   a. Refuses or fails to supply enough properly skilled workers or proper materials;

   b. Fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

   c. Disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

   d. Otherwise commits a substantial breach of any provision of the Contract Documents.

2. When any of the above reasons exist, the City without prejudice to any other rights or remedies of the City may (after giving the Contractor and the

Contractor's surety, if any, seven days' written notice) terminate employment of the Contractor. In addition the City may (subject to any prior rights of the surety):

a. Take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

b. Accept assignment of subcontracts; and

c. Finish the Work by whatever reasonable method the City may deem expedient.

3. If the Contract is terminated by City as provided in this section, Contractor shall not be entitled to receive any further payment until the expiration of 35 days after Final Completion and acceptance of all Work by City.

If the unpaid balance of the Contract Sum exceeds the cost of completing the Work, including all additional costs and expenses made necessary thereby, including costs for City staff time, plus all losses sustained, including any liquidated damages provided under the Contract Documents, such excess shall be paid to Contractor. If such costs, expenses, losses, and liquidated damages exceed the unpaid balance of the Contract Sum, Contractor shall pay such excess to City.

If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination has been issued for the convenience of the City.

No termination or action taken by City after termination shall prejudice any other rights or remedies of City provided by law or by the Contract Documents upon such termination; and City may proceed against Contractor to recover all losses suffered by City.

## H. TERMINATION BY THE CITY FOR CONVENIENCE

1. The City may at its option, terminate this Contract in whole or in part at any time without cause by written notice thereof to the Contractor.

Upon any such termination, the Contractor agrees to waive any claims for damages, including loss of anticipated profits, on account thereof, and as the sole right and remedy of the Contractor, the City shall pay Contractor in accordance with this Paragraph. The provisions of the Contract which by their nature survive final acceptance of the Work, shall remain in full force and effect after such termination to the extent provided in such provisions.

Upon receipt of any such notice of termination, the Contractor shall, unless the Notice directs otherwise, immediately:

a. Discontinue the Work to the extent specified by the City;

b. Place no further orders or subcontracts for materials, equipment, services or facilities, except as may be necessary for completion of that portion of the Work, if any, the City has directed not to be discontinued;

c. Promptly make every reasonable effort to procure cancellation upon satisfactory terms as determined by the City of all orders and subcontracts not related to that portion of the Work, if any, the City has directed not to be discontinued;

d. Do only such other activity as may be necessary to preserve and protect work already in progress and to protect materials and plants and equipment on the Project Site or in transit thereto.

Upon such termination, the obligations of the Contract shall continue as to portions of the Work already performed and as to bona fide obligations the Contractor assumed prior to the date of termination.

Upon termination, the City shall pay the Contractor the full cost of all Work properly done by the Contractor to the date of termination not previously paid for by the City. If at the date of such termination the Contractor has properly prepared or fabricated off site any goods for subsequent incorporation in the Work, the City may direct the Contractor to deliver such goods to the Site or to such other place as the City may reasonably determine, whereupon the City shall pay to the Contractor the cost for such goods and materials.

2. Upon such termination, City shall pay to Contractor the sum of the following:

a. The amount of the Contract Sum allocable to the portion of the Work properly performed by Contractor as of the date of termination, less sums previously paid to Contractor.

b. Previously unpaid costs of any items delivered to the Project site which were fabricated for subsequent incorporation in the Work.

c. Any proven losses with respect to materials and equipment directly resulting from such termination.

d. Reasonable demobilization costs.

The above payment shall be the sole and exclusive remedy to which Contractor is entitled in the event of termination of the Contract by City pursuant to this provision; and Contractor will be entitled to no other compensation or damages and expressly waives same.

## I. CLAIMS & DISPUTES

The Contractor and City shall make any Claim against the other party in writing giving a description thereof. The claimant may make a Claim only within twenty-one (21) days after occurrence of the event giving rise to such Claim or within twenty-

one (21) days after the Claimant first recognizes the condition giving rise to the Claim, whichever is later.

Pending final resolution of a Claim (unless the Parties otherwise agree in writing) the Contractor shall proceed diligently with performance of the Contract and the City shall continue to make payments in accordance with the Contract Documents.

When the City makes final payment and the Contractor accepts the same, the City and the Contractor thereby waive all claims except those arising from:

1. Unsettled liens, Claims, security interests or encumbrances arising out of the Contract;

2. Failure of the Work to comply with the requirements of the Contract Documents; or

3. Terms of special guarantees required by the Contract Documents.

If the either party encounters or discovers (1) subsurface or otherwise concealed physical conditions which differ materially from the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherently encountered in the Work, then the observing party shall give prompt notice of the condition to the Contract Administrator and the other party by giving a description thereof. The observing party shall give such notice promptly before conditions are disturbed and in no event later than twenty-one (21) days after first observance of the same.

If the Contractor wishes to make Claim for an increase in the Contract Sum, the Contractor shall provide written notice as provided herein before proceeding to execute the Work. Written notice is not necessary for emergencies endangering life or property. The Contractor may make claims for additional cost for reasons including but not limited to (1) a written opinion from the Contract Administrator, (2) an order by the City to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Contract Administrator, (4) failure of payment by the City, (5) termination of the Contract by the City, (6) City's suspension or (7) other reasonable grounds.

If the Contractor wishes to make Claim for an increase in the Contract Time, the Contractor shall give written notice as provided herein. The Contractor's Claim shall include an estimate of cost and delay on the Work, if any. In the case of a continuing delay only one Claim is necessary.

If the Contractor bases a Claim for additional time on adverse weather, the Contractor shall substantiate such Claim with data substantiating that: (1) the adverse weather was abnormal for the period of time, (2) the Contractor could not have reasonably anticipated the adverse weather, and (3) the weather had an adverse effect on the scheduled construction.

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or

agents, or of others for whose acts such party is legally liable, the claimant shall give written notice of such injury or damage (whether or not insured) to the other party within twenty-one (21) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If the claimant asserts additional cost or time related to such injury or damage, the claimant shall file a separate claim for each.

### J. RESOLUTION OF CLAIMS AND DISPUTES

The Contract Administrator shall review Claims and take one or more of the following preliminary actions within ten days after receipt of a Claim: (1) request additional supporting data from the Claimant, (2) submit a schedule to the parties indicating when the Contract Administrator expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Contract Administrator may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

If the City and Contractor resolve the Claim, the Contract Administrator shall prepare a Change Order or other documentation accordingly.

If the City and Contractor do not resolve the Claim after consideration of the foregoing, either party may seek a judicial resolution of any Claim. Any Claim against the City shall comply with the provisions of *Neb. Rev. Stat.* § 15-840 et seq. and other applicable laws relating to claims against the City.

## VIII. GUARANTEE AND PAYMENT

### A. GUARANTEE

1. All Work

Unless specified otherwise in the Contract Documents, the Contractor shall guarantee the work for a period of one year after: Final Completion of the Work or a designated portion thereof. Nothing contained in this paragraph shall establish a period of limitation with respect to other obligations that the Contractor might have under the Contract Documents.

2. Utility Construction

The Contractor guarantees all utility construction, against defects in material or workmanship for a period of two (2) years from the date of the approval and acceptance by the proper authority of the Work performed under the Contract Documents; and he also guarantees against damage, during the two-year (2) guarantee period, structures, all backfilled trenches and all sidewalks, pavement, and driveways judged by the Contract Administrator to have been a part of, in close proximity to, or built subsequent to the work performed under the Contract Documents. The Contractor guarantees all traffic and non-owner supplied street lighting materials for two (2) years from the date of

approval and acceptance. The Contractor shall bear the entire expense and cost of all repairs, which may from imperfection in work or material, become necessary within that time.

3. Asphaltic Paving and Resurfacing

The Contractor guarantees all paving construction against defects in material or workmanship for a period of two (2) years from the date of the approval and acceptance of the work performed under the Contract Documents. The Contractor shall bear the entire expense and cost of repairing any surface cracks that develop in the asphalt surface within such guarantee period. The cracks shall be carefully cleaned of foreign material and filled with emulsified asphalt crack filler or asphalt cement. All of this work shall be performed at the direction and to the satisfaction of the Contract Administrator.

4. Portland Cement Concrete Pavement

The Contractor guarantees all paving construction against defects in materials or workmanship for a period of two (2) years from the date of the approval and acceptance of the work performed under the Contract Documents.

The Contractor shall bear the entire expense and cost of repairing any random surface cracks or spalling that develops in the finished slab. The cracks shall be routed and filled with a concrete weld material that has a similar color as the concrete. The Contractor shall reseal all transverse and longitudinal joints that are showing signs of any separation. All such joints shall be resealed with the same product that the Contract required, or a similar substitute as approved by the Contract Administrator.

5. Procedure

During such guarantee period, if the City discovers that any of the Work is not in accordance with the Contract Documents, the City shall notify the Contractor in writing. The City shall give such notice promptly after discovery of the condition. Upon such notice, the Contractor shall promptly correct the work, at the Contractor's expense. The Contractor shall extend the guarantee period for any portions of Work first performed after Substantial Completion. The Contractor shall extend the guarantee period for the number of days between Substantial Completion and the actual completion of such Work. All obligations shall survive acceptance of the Work under the Contract and termination of the Contract.

If at any time within the period of guarantee, any of the Work included in the guarantee shall require any repair or reconstruction, the Contract Administrator shall notify the Contractor to make the repairs required. Upon receipt of such notice, the Contractor shall proceed with such repairs and shall complete the same within a time fixed by the Contract Administrator, all at the Contractor's cost and expense.

If the Contractor shall neglect or fail to proceed with such repairs, then the City shall have the right to cause such repairs to be made in such manner as it deems best and the whole cost thereof shall be paid directly by the Contractor or reimbursed by him to the City; and if the Contractor neglects or refuses to do so, such cost shall be paid by the Contractor's Surety on the performance bond required by the Contract Documents. The liability of such bond shall continue during the full guarantee period.

It shall be the duty of the Contractor to notify the Contract Administrator in writing within thirty (30) days prior to the expiration of the guarantee period to make a final inspection of the work. If the Contractor does not furnish such notice, the obligation to maintain such work in proper condition shall continue in force until such notice shall have been issued as above provided. If the end of the guarantee period falls between December 1st and April 30th, then such period may not be considered as expired until May 1st following, and the thirty (30) days' notice must be served upon the Contract Administrator the month preceding that date.

## B. SUBSTANTIAL COMPLETION

When the Contractor considers that the Work (or a portion thereof that the City agrees to accept separately) is substantially complete, the Contractor shall prepare and submit to the Contract Administrator a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Contract Administrator shall make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Contract Administrator's inspection discloses any item that does not comply with the Contract Documents (including any items on the Contractor's list) the Contractor shall complete or correct such item upon the Contract Administrator's written notification. Once corrected or completed, the Contractor may submit a request to the Contract Administrator for another inspection to determine Substantial Completion.

When the Work or designated portion thereof is substantially complete, the Contract Administrator may prepare a Certificate of Substantial Completion. Upon the City's approval, such Certificate shall establish: (1) the date of Substantial Completion; (2) responsibilities of the Contractor for security, maintenance, heat, utilities, damage to the Work and Insurance; and (3) the time for the Contractor to finish all items on the list accompanying the Certificate. Guarantees provided in the Contract Documents shall commence on the date of Substantial Completion unless otherwise provided in the Certificate of Substantial Completion. The Contractor shall accept the Certificate of Substantial Completion and the responsibilities assigned in such certificate by signing the same. The Contract Administrator shall submit the Certificate to the Contractor for such acceptance.

The City shall make payment for the Work as certified in the Certificate of Substantial Completion upon the Contractor's written application and the Contract Administrator's Certificate for payment as provided in the Contract Documents.

The Contractor shall secure and deliver to the City any written guarantees from Subcontractors, Sub-Subcontractors and suppliers. Such guarantees shall state the period of guarantee as required by the Contract Documents or otherwise as the City has agreed. The Contractor guarantees all of the Work regardless of separate guarantees by Subcontractors at any tier.

## C. ACCEPTANCE OF WORK

All work under and the requirements of the Contract Documents shall be deemed as having been fulfilled and met when the work is accepted by the City by formal action of the Contract Administrator that the work be finally accepted. Upon acceptance of the work by the City, ownership of the work shall pass to the City.

No work shall be accepted until the Contract Administrator has completed the final inspection and notified the Contractor of satisfactory completion of same; if any areas of concern for workmanship or materials exist at the time of final inspection, the Contract Administrator shall notify the Contractor, in writing, of remaining deficiencies.

The Contractor shall correct all deficiencies. No work shall be accepted until the final completion of the whole; and inspection during construction or partial payment for work or materials shall not imply any acceptance of same.

## D. PROGRESS PAYMENT

Providing the work herein contracted for is being performed in accordance with the provisions of the Contract Documents, the Contract Administrator may make an approximate estimate of the value of the work performed during the previous month. After each estimate has been approved by the City, the City may then pay to the Contractor, in City warrants, ninety-five percent (95%) of the value of the work completed to date. The City may, at all times, reserve and retain out of said payment all such sums as, in the judgement of the Contract Administrator, will be adequate to insure completion of the work. Retainage amounts may be reduced with the written request of the contractor and agreement by the Contract Administrator in advance of project completion. Consideration will be given to time frames of work completion in relationship to the total work.

The City may include in progress payments the invoiced value of materials on hand and properly stored and to be used solely on the contracted project, so long as the unit bid price is not exceeded.

The Contractor may request semi-monthly progress payments. Such requests shall be made in writing to the Contract Administrator.

If the Contract Administrator certifies the project is substantially complete and provided a final payment will be delayed more than sixty (60) days because of project complexities or the determination of final costs and quantities, the Contract Administrator may authorize payment in an amount not to exceed ninety-nine percent (99%) of the value of the work performed.

## E. FINAL PAYMENT

1. Lump Sum Contracts.

   The Contract Administrator shall, as soon as practicable after the completion and final acceptance of the Work, make a final payment for the amount of work done under the Contract Documents. Final payment shall be determined and executed by change order or by executive order.

2. Unit Price Contract.

   When all the work under the Contract Documents is completed and accepted, the Contract Administrator shall have final measurements made to determine the final quantities of the various items of work performed. He shall have prepared a final estimate of the total amount due the Contractor, which estimate shall be based on the final quantities and Contract unit prices, together with the value of any extra work. Final payment shall be determined and executed by change order or executive order.

3. All Contracts.

   When the final payment has been approved by the City, the City will pay to the Contractor, all amounts accruing under the Contract Documents, less authorized adjustments to reflect properly the amount of work done less liquidated damages and less all previous progress payments. All prior estimates shall be subject to correction in the final estimate and payment.

4. Waiver of Claims.

   The making and acceptance of final payment shall constitute:

   a. A waiver of all claims by the City against the Contractor other than those arising from defective work appearing after the final inspection or from failure to comply with the requirements of the contract documents or the terms of any special guarantees specified therein, and

   b. A waiver of all claims by Contractor against the City.

# IX. MISCELLANEOUS

## A. MOBILIZATION

This work shall consist of preparatory work and operations, associated with the necessary movement of personnel, equipment, supplies and incidentals to the project site and for all the work and operations which must be performed or costs that are necessarily incurred prior to commencing the Work. The Contractor shall include all expected costs for movement of his and any subcontractors' equipment and material necessary to prosecute the work to completion, including any

demobilization. Additional payments will not be made for interruptions in the prosecution of the Project if the Contractor fails to adequately assess the actual costs of mobilization.

Basis of Payment:

No measurement is required. Fifty percent of the bid item for mobilization will be paid with the initial pay estimate. The balance of the bid item for mobilization will be paid when twenty percent of the value of the work has been completed. The bid amount for mobilization cannot exceed ten percent of the total bid amount (including mobilization).

## B. CONSTRUCTION STAKING

Unless otherwise specified, the scope of Construction Staking when listed with the items for bid is as follows:

The City will provide horizontal and vertical control points as shown on the plans for the Contractors use in establishing the exact location and elevations for the project. The Contractor shall be responsible for preserving (or reestablishing) these control points if necessary. The Contractor shall use this control to provide all construction staking that is required for the project. This shall include staking for grading, pavement construction, utility construction, retaining walls, establishment of temporary easement limits and right-of-way lines, and all other survey work to complete the project in accordance with the details shown on the plans. Contractor shall follow the current Lincoln Standard Plan.

The Contractor shall be responsible for the placement and preservation of adequate ties and references necessary to complete the Work. Any additional stakes, templates and other materials necessary for marking and maintaining all reference points and lines shall be the responsibility of the Contractor. The Contractor shall be solely and completely responsible for the accuracy of the line and grade for all features of the Work. All Work shall be completed to the lines, grades, and elevations indicated on the plans. The Contractor shall remove and reconstruct, at his expense, work that is improperly located.

The Contractor's staking records shall be recorded in a format approved by the City and submitted to the City at the completion of the project. Record notebooks and electronic data, in a format acceptable by the City, will be submitted to the City at the completion of the project.

Basis for payment:

Construction staking shall not be measured, but shall be paid for at the Contract Lump Sum amount bid for the pay item "Construction Staking". The amount of the lump sum to be included in each partial payment shall be in proportion to the value of the work completed with respect to the total amount of the original bid.

## C. AUDIT/EXAMINATION OF RECORDS

Whenever the City enters into any type of contractual arrangement, the Contractor's records shall, upon reasonable notice, be open to inspection and subject to audit and/or reproduction during normal business working hours. Such audits may be performed by a City's representative or an outside representative engaged by the City. The City or its designee may conduct such audits or inspections throughout the term of this contract and for a period of five years after final payment.

Contractor's records, as referred to in this contract, shall include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may, in the City's judgment, have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records shall include (hard copy, as well as computer readable data if it can be made available), written policies and procedures; time sheets; payroll registers; payroll records; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); back charge logs and supporting documentation; invoices and related payment documentation; general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends; and any other contractor records which may have a bearing on matters of interest to the City in connection with the contractor's dealings with the City (all foregoing hereinafter referred to as "records") to the extent necessary to adequately permit evaluation and verification of:

1. Contractor compliance with contract requirements,

2. Compliance with ethical practices, and

3. Compliance with provisions for pricing change orders, invoices or claims submitted by the contractor or any of his payees.

The Contractor shall require all payees (examples of payees include subcontractors and material suppliers) to comply with the provisions of this article by including the requirements hereof in a written contract agreement between the Contractor and payee. Such requirements to include flow-down right of audit provisions in contracts with payees will also apply to Subcontractors and Subcontractors' material suppliers, etc. The Contractor will cooperate fully and will cause all related parties and all of Contractor's subcontractors (including those entering into lump sum subcontracts) to cooperate fully in furnishing or in making available to the City from time to time whenever requested, in an expeditious manner, any and all such information, materials and data.

The City's authorized representative or designee shall have reasonable access to the Contractor's facilities, shall be allowed to interview all current or former

employees to discuss matters pertinent to the performance of this contract, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.

If an audit inspection or examination in accordance with this article discloses overpricing or overcharges (of any nature) by the Contractor to the City in excess of one percent (1%) of the total contract billings, in addition to making adjustments for the overcharges, the reasonable actual cost of the City's audit shall be reimbursed to the City by the Contractor. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Contractor's invoices and/or records shall be made within a reasonable amount of time (not to exceed ninety (90) days) from presentation of the City's findings to Contractor.

## D. CONTRACTOR GUARANTEES REGARDING: SCHEDULING

The Contractor covenants and guarantees that the Contractor will not:

1. Misrepresent to the City its planning, scheduling and coordination of the Work;

2. Utilize schedules materially different from those given to or made available to the City or any Subcontractors for the direction, execution and coordination of the Work, or which are not feasible or realistic;

3. Prepare schedules, updates, revisions or reports which do not accurately reflect the Contractor's actual intent or the Contractor's reasonable and actual expectations as to:

    a. The sequences of activities;

    b. The duration of activities;

    c. The responsibility for activities;

    d. Resource availability;

    e. Labor availability or efficiency;

    f. Expected geological conditions;

    g. Weather, strikes or other delays or events impacting the work;

    h. Value associated with the activity;

    i. The percentage complete of any activity;

    j. Completion of any item of work or activity;

    k. Project Completion;

    l. Delays, slippages or problems encountered or expected;

m. Subcontractor requests for time extension, or delay claims of subcontractors.

4. The Contractor's failure to comply with the foregoing covenant and guarantee shall be a substantial and material breach of contract which will permit the City to terminate the Contractor for default, or withhold payments under the Contract Documents, and shall entitle the City to the remedies and damages afforded for misrepresentation or fraud by these Contract Documents or applicable law.

5. Should the Contractor fail to comply with the provisions of the Contract Documents relating to scheduling and execution of the Work by the overall project schedule, the City shall have the right, at its option, to retain the services of scheduling consultants or experts (including attorneys if necessary in the opinion of the City) to prepare schedules, reports, updates and revisions of the schedule in accordance with the Contract Documents and to review and analyze same, in order to allow the City and the Contract Administrator to evaluate the progress of the Work by Contractor to determine: a) whether the Contractor is complying with the Contract Documents, and to direct such action of the part of the Contractor, as permitted by the Contract Documents, as required to ensure, under the City's schedule prepared hereunder, that the Contractor will complete the work within the Contract Time; and b) all costs and expenses and fees incurred by the City in preparing the schedule hereunder shall be charged to the Contractor's account. If the Contractor fails to comply with the scheduling and execution of the work requirements of the Contract Documents, the Contractor hereby agrees, in such instance, to comply with such City-prepared schedules, if any, or directions and activity sequences, and durations as the City may reasonably require, without additional cost to the City (subject only to cost adjustments for such changes in the Work as the City may direct) to ensure completion within the Contract Time.

## X. INSURANCE REQUIREMENTS

### A. WAIVERS OF SUBROGATION

The City and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Consultant, separate contractors, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by property Insurance obtained pursuant to this Section X or other property Insurance applicable to the Work, except such rights as they have to proceeds of such Insurance held by the City as fiduciary. The City or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors, if any, and the subcontractor, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers fo Subrogation by endorsement or otherwise. A waiver of Subrogation shall be effective as to a person or entity even

though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the Insurance premium direct or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

## B. INSURANCE REQUIREMENTS FOR ALL CITY CONTRACTS

To obtain the current Insurance requirements for all City contracts, go to the City's website at: **http://www.lincoln.ne.gov/city/finance/purch/index.htm**

The duties and obligations imposed by these General Provisions and the right and remedies available hereunder, and, in particular but without limitation, the guarantees and obligations imposed upon the Contractor and the rights and remedies available to the City hereunder shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to them which are otherwise imposed or available by law, by special guarantee or by other provisions of the contract documents.

SECTION 230513 GENERAL MECHANICAL METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general conditions and supplementary conditions are pplicable to all contracts for the project.

1.2 DESCRIPTION OF WORK

A. The work included under this section consists of providing all work, supervision, and construction procedures necessary for the installation of the complete mechanical systems required by these specifications and/or shown on the drawings of the contract.

B. Install and connect all equipment as specified and indicated for this project, in accordance with the manufacturer's instructions and recommendations. Furnish and install complete connections and devices as recommended by the manufacturer or required for proper operation.

1.3 ACCESSIBILITY

A. Install equipment and materials to provide required access for service and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.

1.4 SHOP DRAWINGS

Submit shop drawings for all equipment and materials.

A. The mechanical contractor shall furnish shop drawing portfolios and proper transmittal forms for all materials, equipment to be incorporated in the work, in accordance with the general conditions, supplementary conditions, and all other applicable conditions.

B. Shop drawings on component items forming a system or that are interrelated shall be submitted at one time as a single submittal in order to demonstrate that the items have been properly coordinated and will function properly as a system. A notation shall be made on each shop drawing submitted as to the item's specific use, either by a particular type number referenced on the drawings or in the specifications, or by a reference to the applicable paragraph of the specifications or by a description of its specific location. The shop drawings shall be organized and bound into sets with each set collated. A minimum of four copies shall be submitted.

1.5 ROUGH-IN

A. Verify final locations for rough-in with field measurements and with the requirements of the actual equipment to be connected. Bring any discrepancies to attention of owner for action before proceeding.

1.6 MECHANICAL INSTALLATIONS

Perform mechanical installations in accordance with the contract documents and specifications.

A. Coordinate mechanical equipment and materials installation with other building components.

B. Verify all dimensions by field measurements.

C. Arrange for chases, slots, and openings in other building components to allow for mechanical installations.

D. Coordinate the cutting and patching of building components to accommodate the installation of mechanical equipment and materials.

E. Coordinate the installation of mechanical materials and equipment above ceilings with suspension system, light fixtures, and other installations.

1.7 CUTTING AND PATCHING

Perform cutting, fitting, and patching of mechanical equipment and materials as required.

A. Do not damage existing adjacent work through procedures and processes of cutting and patching.

B. Arrange for repairs required to restore other work, due to incidental damage as a result of mechanical installations.

C. No additional compensation will be authorized for cutting and patching work that is necessitated by new equipment installations or carelessness.

D. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated, including, but not limited to removal of mechanical piping, heating units, plumbing fixtures and trim, and other mechanical items made obsolete by the new work. Owner shall have right of first refusal for all salvage.

E. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

F. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

G. Locate, identify and protect mechanical and electrical services passing through remodeling or demolition area and serving other areas required to be maintained operational. When services must be interrupted, provide temporary services for the affected areas and notify the owner 24 hours prior to any anticipated service interruption.

1.8 RECORD DOCUMENTS

A. Mark drawings to indicate revisions to piping and ductwork, size and location both exterior and interior; including locations of coils, dampers and other control devices, filters, boxes, and similar units requiring periodic maintenance or repair; actual equipment locations, dimensioned for column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned to column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.); change orders; concealed control system devices.

1.9 QUALITY ASSURANCE

A. Comply with all local, state, and national code requirements including but not limited to the Omaha plumbing code, international mechanical code and NFPA.

END OF SECTION 230513

# SECTION 233522 SLIDING BALANCER TRACK VEHICLE EXHAUST REMOVAL SYSTEM

## PART 1: GENERAL

### 1.1 RELATED DOCUMENTS

A. Conditions of the Contract and portions of Division One of this Project Manual apply to this Section as though repeated herein.

### 1.2 SUMMARY

A. Provide all labor, materials, and equipment necessary to put in working operation a complete turnkey system to remove both diesel and automotive exhaust gases and particulate of operating vehicles within the confines of specified fire station(s). All necessary controls, motors, fittings, ductwork, blower(s), labor and all other equipment and materials specified shall be part of the work.

B. Section Includes:

1. Sliding Track.
2. Support Legs.
3. Double Track Joiner Plate.
4. Track Splicing Assembly.
5. Riser Clamp Assembly.
6. Trolley/Balancer Assembly.
7. Regulator Assembly.
8. Uncoupling Valve Assembly.
9. Upper Flexible Hose.
10. Lower Hose Assembly.
11. Safety Disconnect Coupling.
12. Collection Nozzle Assembly.
13. Manual Fill Valve.
14. Compressed Air Features.
15. Hose Saddle.
16. Electrical Controllers.
17. Electrical System.
18. Air Moving Devices.
19. Ductwork System.

C. All items of equipment and materials described in these specifications are to be furnished installed and placed into proper operating condition in accordance with good practice and manufacturer's written or published instructions.

1. The exhaust removal system shall provide 100 percent complete evacuation of all diesel fumes at the source from start up to exit of the apparatus from the fire station. The diesel exhaust removal system shall be capable of delivering complete coverage for bays up to 60 feet (18288 mm) in length. The system must be able to accommodate drive through and back-in bays to meet all the needs of the fire department.
2. The system shall not affect personnel boarding the apparatus. Hose loops shall not hang any lower then six feet from the bay floor. The hose assembly shall not come into contact with the vehicle other than one connection point to the vehicles tailpipe. The hose assembly shall not touch or drag on the bay floor.
3. The exhaust system shall not block doorways, exits, and aisles in the apparatus bay, which could endanger the welfare of fire personnel or visitors.
4. To protect the apparatus electrical system from possible damage, the system bid shall not incorporate any type of electromagnetic device that requires the apparatus to be utilized as an electrical ground for systems operation.
5. Due to the harmful effects of diesel exhaust, the system must be designed and capable of capturing 100% of the exhaust gas and particulate even in the event of a complete power failure. The system shall not detach itself from the apparatus for any reason during a power failure other then normal exiting of the apparatus bay. System shall discharge exhaust outside the station even in the event of a power failure.
6. The system shall under no circumstance allow exhaust leakage or bypass the nozzle.

1.3 SUBMITTALS

A. Product Data: Indicate manufacturer's model number, technical data including description of components and static pressure/air flow chart, and installation instructions.
   1. Details of wiring for power differentiating between manufacturer-installed and field-installed wiring.

B. Closeout Submittals: Operation and Maintenance data manual including spare parts list.

1.4 QUALITY ASSURANCE

A. Engage an factory certified installer to perform work of this Section who has completed installations similar in design and extent to that indicated for this Project, and who has a record of successful in-service performance.

B. All components shall be fabricated in strict accord with standards set forth in the current edition of ISO 9002.

C. Engage a firm experienced in manufacturing vehicle exhaust systems similar to that indicated for this Project and with a record of successful in-service performance.

D. Conduct conference at Project site. Review methods and procedures related to vehicle exhaust system installation.
   1. Review access requirements for equipment delivery.
   2. Review equipment storage and security requirements.
   3. Inspect condition of preparatory work performed by other trades.
   4. Review structural loading limitations.
   5. Review that all components specified in this Section and related components specified in other Sections are accounted for.

1.5 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading: Deliver components with protective packaging. Store in original protective crating and covering and in a dry location.

1.6 PROJECT/SITE CONDITIONS

A. Existing Conditions: Verify dimensions installation areas by field measurements.

1.7 COORDINATION

A. Coordinate layout and installation with other work, including light fixtures, fixed equipment and work stations, HVAC equipment, and fire-suppression system components.

B. Coordinate location and requirements of service-utility connections.

1.8 REFERENCES

A. Air Movement & Control Association International, Inc.
   1. AMCA Standard 500-D-98, "Laboratory Methods of Testing Dampers for Rating".

B. ASTM International.
   1. Stainless Steel:
      a. A240/A240M-04ae1 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
      b. Bright, Directional Polish: No. 4 finish.
   2. Aluminum:
      a. B209/209M-04 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
      b. Powder-Coated Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.
   3. Galvanized Steel:
      a. A653/A653M-04a Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.9 BIDDER QUALIFICATIONS

A. Bids will only be accepted from companies that have an established reputation in the business of system design, turnkey installation and long-term service of Automatic Emergency Response Vehicle Exhaust Removal Systems for a minimum of no less than five (5) years. Bidder shall show proof that the system specified in this Bid Document has been field tested and proven by supplying a list of references with no less than 10 fire departments with systems installed by bidder (with comparable emergency and non-emergency run rates) within a 250 mile radius. References shall be submitted with the Bid Document and shall include phone numbers and contact names.

1.10 MANUFACTURER QUALIFICATIONS

A. Bids shall only be accepted by bidders supplying equipment from manufacturers that have an established reputation in the business of manufacturing Automatic Emergency Response Vehicle Exhaust Removal Systems for a minimum of no less than ten (10) years. System bid shall have a life of service of no less than 10 years to establish proof of quality, longevity and service. Equipment life of service shall meet the department's expectations for similar types of equipment. No exceptions

PART 2: PRODUCTS

2.1 SLIDING TRACK

A. A one-piece continuous extruded aluminum track in a minimum length of 19 feet (5791.2 mm). Profile shall be of a Boxloc type profile, track height 3-1/8 inches (73.4 mm), track width 1-½ inches (38.1 mm), track thickness 1/8 inch (3.175 mm); aircraft aluminum alloy Type AA-6063 (ASTM B209/B209M). Track: Extruded design that shall incorporate three separate and functioning channels. Channels: Includes the mounting channel, the trolley channel and the Boxloc channel. Mounting Compartment: Designed to accept the slider bars (which shall be provided with factory supplied vertical support legs and riser clamp duct connection) and to allow positioning along the full length of the slotted track-mounting channel. Mounting Channel: Also accommodate the compressed airlines for the purposes of safe storage and appearance. Trolley Channel: Allow the trolley/balancer/ hose assembly to glide to the door threshold in a safe and effective manner. Boxloc Channel: Allow the whole track to remain rigid as it hangs from factory supplied leg supports and also shall provide an area to attach bolts for splicing additional tracks together for systems over 19 feet (5791.2 mm) long. The overall extruded track lengths shall be 19 foot standard and shall weigh no more than 35 pounds (15.88 KG). The track system shall be equipped with end stops that limit travel of flex hose as the vehicle exits the building. The end stop shall be fabricated of zinc plated steel in a U shape form with a rubber end stop on the impact end. It shall be attached by using a ¼ inch (6.35 mm) molded locking bolt. The end stop shall be secured to the track with no less than (2) ¼ inch (6.35 mm) bolts and locking nuts located on the underside of the track. For security, a ¼ inch 6.35 mm) bolt shall be drilled through the ends of each track system to ensure that the trolley/balancer assembly(s) roll no further than the end of the track system.

2.2 SUPPORT LEGS

A. Support Leg and Mounting Feet: Manufactured and provided by the supplier of primary exhaust removal system (Equipment Manufacturer). Leg Material: Aircraft aluminum alloy Type AA-6063 (ASTM B209/B209M). Supports shall come standard in 19 feet (5791.2 mm) lengths. A minimum of one support with appropriate bracing shall be provided for every 10 linear feet (3048 mm) of track profile. The support legs shall consist of a square tubular profile with dimensions no less than 2 inch (50.8 mm) OD X 0.1 inch (2.54 mm) with 0.4 inch (10mm) fastening hardware provided. Vertical Adjustable Mounting Foot: Capable of attaching the leg assembly to a ceiling with a 30 degree pitch, complete with a slider bar and 3/8 inch (9.5 mm) hardware necessary for mounting the horizontal track to the mounting channel system. Horizontal Adjustable Mounting Foot: Capable of attaching the leg assembly to a wall, complete with a slider bar and 3/8 inch (9.5 mm) hardware necessary for mounting the horizontal track to the mounting channel system. Support Leg: Equipped with round tubular zinc-plated steel

knee brace with pressed ends in standard lengths of 20 inches (508 mm), 30 inches (762 mm) and 72 inches (1828.8 mm). Angle Completely adjustable to the leg support and mounted perpendicular and parallel to direction of the track. Typical Support Angle: 45 degrees from the centerline of the factory provided support leg. The standard leg shall be capable of meeting a Seismic 4 requirement.

2.3 DOUBLE TRACK JOINER PLATE

A. Joiner Plate: constructed from a minimum of ¼ inch (6.35 mm) thick zinc-plated material, designed to connect two parallel tracks to make a double track system to accommodate an apparatus bay over 40 feet (12192 mm) in length. Joiner Plate: 10 inch (254 mm) by 8 inch (203.2 mm) flat zinc-plated steel and designed to attach the two tracks to a single factory supplied support leg. The steel plate shall have (6) 3/8 inch (9.5 mm) holes drilled 6-7/8 inches (174.6 mm) apart to accommodate the slider bar provided with factory support legs. Joiner Plate: Have two slider bars attached to the plate, located on the outside edges of the plate. These slider bars shall fit into the Boxloc track mounting channel for a simple and secure attachment of the plate to the Boxloc track. The center portion of the joiner plate shall provide attachment for the factory supplied support leg.

2.4 TRACK SPLICING ASSEMBLY

A. Track Splice: Manufactured of galvanized steel (ASTM A653/A653M) in two parts and utilized as a clamping device. This clamp shall accurately secure both tracks together in a fashion, which shall eliminate any possibility of obstructing the trolley assembly as it passes through this connection point of track system. Connecting length of splice shall be a minimum of 15-3/4 inches(400 mm) long and fabricated of 14 gauge material. Four (4) 1/4 inch (6.35 mm) bolts with lock nuts shall pass directly through internal partition of the Boxloc track. The splicing sleeve shall fit externally around the outside dimension of extruded aluminum track profile.

2.5 RISER CLAMP ASSEMBLY

A. Riser Clamp: Fabricated as a one piece welded assembly, manufactured to create the transfer of the hard spiral pipe joined at the top and flexible duct connection at the bottom. The riser clamp shall be pre-drilled to mount an air regulator assembly for the pneumatic nozzle and to accept airlines that pass through airtight seals mounted to riser pipe. A slider bar and associated hardware shall be provided with riser clamp assembly. Sizes of the riser clamp will range from 4 inches (101.6 mm) to 5 inches (127 mm) in diameter to match the output velocity of the vehicles that will park in that station.

2.6 TROLLEY/BALANCER ASSEMBLY

A. Trolley Assembly: Manufactured as a two piece galvanized steel assembly including bumper stops at each end. Fixed to the side of the trolley are solid steel pins, which shall be for load carrying bearings that are sealed and permanently lubricated. The load carrying bearings shall travel internally in track trolley channel. Two additional permanently lubricated trolley wheels shall be provided on bottom side of the track to reduce wobble of trolley as it conveys the hose assembly to the door threshold. Release Plate: Attached to the chassis of the trolley to smoothly energize the uncoupling release valve when the trolley-balancer assembly approaches the door threshold. System Balancer Assembly: Self-adjusting weight spring tension balancer with a lifting capacity of no less than 31 pounds (14 KG). The balancer shall have a minimum diameter stainless steel cable of .080 inch (2 mm), safety link connection.

2.7 REGULATOR ASSEMBLY

A. Regulator: Safely operate with an input pressure of 0 psi (0 $KG/m^2$)- 200 psi (140614 $KG/m^2$) ; the output pressure shall be preset at 15 psi (10546 $KG/m^2$). Regulator: Attached to each Riser Clamp Assembly/Hose Drop or to the Boxloc track to allow for independent adjustment of each pneumatic nozzle. The regulator shall also be provided with needle type adjustment gauge that is clearly marked with the proper operating range of the system and the gauge shall be visibly read from standing on the bay floor.

2.8 UNCOUPLING VALVE ASSEMBLY

A. Uncoupling Valve Assembly: Provided to activate the release of the pneumatic nozzle connection to the vehicle's exhaust pipe, single direction action and affixed to a mounting bracket, which can be easily positioned and adjusted along the full length of the extruded aluminum track profile. Mounting Bracket: Formed from a minimum of 16 gauge galvanized steel and designed to fit snugly over the top of the Boxloc track system. A ¼ inch (6.35 mm) opening shall be centered to the top side of bracket to accommodate a ¼ inch by 1 inch (25.4 mm) bolt with a ¼ inch 6.35 mm) thick plated 1-½ inch (38.1 mm) long bar providing the secure attachment of the Uncoupling Valve. When the system is put into service the release valve shall be set for the maximum exiting speed of the vehicle.

2.9 UPPER FLEXIBLE HOSE

A. Upper Hose: Flexible exhaust hose manufactured for the sole purpose of venting high temperature exhaust gases. Flexible Hose: Designed strictly for the harsh environment of rapid response and auto-release of a vehicle exhaust tailpipe. Hose: Range from 4 inch (101.6 mm) to 5 inch (127 mm) diameters with varying lengths depending on the system length required ranging from 20 feet 6096 mm) to 43 feet (13106 mm) without joining or splicing connections. Hose Material: High temperature synthetic rubber impregnated into a high temperature laminated fabric with a minimum overlapping thickness of 2-7/16 inches (61.9 mm). This construction of hose must be capable of operating at continuous temperatures of 400 degrees F (204 degrees C) and intermittent temperatures of 500 degrees F (260 degrees C) such as are experienced when pump checks are performed inside the station. Wire Helix: Bound and protected in laminations of hose winding. This shall be accomplished in a fashion, which eliminates any possibility of personnel coming in contact with an exposed hot metal helix. The hose shall further protect the internal wire helix from heat buildup and in turn add increased visibility to personnel. Wear Strip: 9/16 inch (14.28 mm) wide and be provided as a safety yellow color. The bend radius of the high temperature hose shall be no less than 1.5 times the diameter of hose to ensure that hot gases are not restricted as they pass through the system.

2.10 LOWER HOSE ASSEMBLY

A. Lower Hose: Rigid 4 inch (101.6 mm) to 5 inch (127 mm) diameter by 2 foot (609.6 mm) long section of yellow and black hose identical in appearance to the upper hose assembly. Lower Hose: Support the pneumatic connection nozzle and chrome reducing elbow in a rigid fashion to allow for the operator to place hose collection nozzle onto the tailpipe without bending over. Lower hose is the only section of hose which shall disconnect from the upper hose assembly and act as a safety disconnect in the unlikely event the nozzle gets entangled.

2.11 SAFETY DISCONNECT COUPLING

A. Safety Disconnect Coupling: 4-part segmented coupling with removable wear strips to protect the vehicle and disconnect from wear shall be incorporated in the design of the system. Coupling: Consist of two spun aluminum (ASTM B209/B209M) collars connected by a reusable-segmented coupling band. The release tension of this device shall be preset at 130 pounds (59 KG). and adjustable from 20 pounds (9 KG). to 206 pounds (93 KG). of separating force to accommodate varying exit speeds of vehicles. Coupling: Reusable.

2.12 COLLECTION NOZZLE ASSEMBLY

A. Collection Nozzle Assembly: Provide a substantially air tight seal around exhaust tail pipe when connected thus allowing for 100% source capture. The seal shall not allow for escape of life threatening exhaust gases, which may be present during the following conditions:

1. In the event vehicle's engine is accelerated above normal idle resulting in an exhaust velocity greater than 5000 feet per minute (25.4 meters per second).

2. In the event that the output velocity or CFM of the exhaust exceeds the manufacturers normal capture velocity or CFM of exhaust system.

B. Nozzle: Automatically adjust its internal orifice to accept any tailpipe ranging from one inch through six-inch (152.4 mm) diameter. Nozzle Pressure: Not exceed 15 psi (10546 $KG/m^2$). when connected to the vehicle's tailpipe. Nozzle Construction: High temperature synthetic rubber vulcanized to a high temperature synthetic fabric. A NOMEX inner liner shall be provided for the primary temperature source at the tailpipe to act as a friction barrier. The chrome-reducing elbow that connects to the connection nozzle shall be fabricated using continuous welded construction. Angle of Transition: No less than or greater than 67 degrees from the centerline of the reducer. Chrome Reducer: Incorporate a primary expanded metal debris screen, which is permanently affixed by welded seams to the inside opening of exhaust fitting.

2.13 MANUAL FILL VALVE

A. Manual Connection Fill Valve: Located 6 inches (152.4 mm) above safety release coupling approximately 4 feet (1219.2 mm) from floor, sliding/push button type for manual or automatic release. In its design this valve shall incorporate in its design a handle which the operator may easily operate in a standing position. The attachment of the collection nozzle shall not position the operator's breathing zone closer than 36 inches (914.4 mm) from the exhaust tailpipe. The automatic release of the connection valve shall be no greater than 3 psi (2109 $KG/m^{2)}$. shift pressure to activate the automatic nozzle deflation. Primary Air Supply: Accomplished by means of a compression type fitting. The regulated air supply line to collection nozzle shall be designed to safely release from the upper hose at a pressure no greater than 80 lbs. (362.8 KG)

2.14 COMPRESSED AIR FEATURES

A. Airlines: ¼ inch (6mm) OD tubing capable of exposure of high temperature air stream inside the ventilation hose and duct. Airlines: Fed through the exterior of the hose through Teflon and brass grommets. Airlines: Fed through the exterior of the duct through high temperature rubber grommets to protect against abrasion. Unless a fire station air compressor is to be utilized the bidder shall provide a quiet operating compressor to be located proximate to the vehicle bays. It shall also be located so that preventative maintenance can be performed quickly and effectively. The operation of the compressor running inside station shall not generate sound decibels in excess of 25 dB. The compressor shall be equipped with a filter/dryer to ensure the conveyance of clean dry air to the pneumatic controls incorporated in the auto-release ventilation system.

2.15 HOSE SADDLE

A. Hose Suspension Saddle: Fabricated of a rubber molded cushion specifically manufactured for the sole purpose of suspending high temperature exhaust ventilation hose in a rapid response and auto-release application. The design of the saddle shall smoothly transition the direction of the hose during its travel along the track. Securing clamps shall be provided including a link fastener, for the purpose of mounting it to the balancer safety link.

2.16 ELECTRICAL CONTROLLERS

A. Controller: Built and supplied by a UL recognized and listed exhaust system manufacturer. Controller shall carry the UL - CUL listing label as an "Enclosed Industrial Control Panel." Individual components listed by UL - CUL shall not satisfy the above requirement. Manufacturer shall undergo monthly inspections by UL to verify all requirements and standards are met as outlined by UL. The controller shall be delivered as an Operating System Three series controller or an approved equal to the specifications to follow.

B. Electrical Controllers: Bear a visible UL listing label as proof of subscribership and shall be validated by UL www.ul.com/database/ as an "Enclosed Industrial Control Panel". Certification documents shall accompany bid documents.

1. Manufacturer Name: _____

2. UL File No.: _____
3. Electrical controller and manufacturer shall be recognized and listed by UL. Controller shall be manufactured in accordance with Underwriters Laboratories standard UL-508 for "Enclosed Industrial Control Panels". The electrical controller shall include a Class 1 limited energy control circuit. Enclosures shall be NEMA 12 rated and UL listed as Type 12. The electrical control components shall be provided and mounted in an electrical enclosure to restrict access to internal components of the controller by authorized personnel only.

C. Controller Performance: Designed to sense the output pressure and temperature change inside the ductwork system, which is normally generated by any internal combustion engine designed to propel a motor vehicle. The operating logic shall be designed to complete this cycle. At any point in time when a collection device is connected to a motor vehicle's exhaust tailpipe, as the operator starts the vehicle, the controller shall automatically sense the engine's output pressure or temperature of the exhaust and in turn energize the electrical contactor which will supply power to the AMCA certified spark resistant fan motor. Through the use of an adjustable timer the controller shall keep the contactors energized for up to six minutes in accordance with the stations response requirement. If the responding vehicle does not disconnect from the exhaust ventilation system in less than the designated setting, the temperature override switch shall override the time delay to ensure continuous system operation. This automated function will work for as long as the exhaust gas temperature is in excess of the setting on the heat sensor located in the ductwork system. This cycle shall not allow the electrical contactor, which energizes the exhaust fan, to short cycle or stop the fan while the system is connected to an operating vehicle.

D. Motor Control Contactor: Allen Bradley Industrial Electrical Contactor 100C series. The contactor shall be UL - CUL listed as an approved component.

E. Motor Control Overload Relay: Allen Bradley 193 ES series. Overload relay shall have an adjustable trip range to meet the proper full load amperage of the blower motor.

F. Soft Touch Controls: Incorporated on the face or the access door of the controller by the use of an adhesive backed Lexan membrane type label to prevent water infiltration, which would void the NEMA 12R rating. Label: Provided and secured permanently to the exterior of the electrical controller. Label: Include the name of the manufacturer, address, telephone number, user instructions and any warnings or cautions required by Underwriters Laboratories.
   1. Auto Start: This mode of operation shall be strictly for normal day to day use, as it would apply to receiving an emergency call and leaving the station. Any one or combination of the three devices listed below in Paragraph H shall activate the system. The system shall maintain itself in the Auto Start mode and always return there after the Stop sequence has been initiated. The controller shall not have a permanent off position due to the potential health hazards of diesel exhaust components.
   2. Stop: This mode of operation shall be a system override to shut down the system manually. Upon activating this mode of operation the exhaust system blower shall shut down. After a period not to exceed three seconds the controller shall automatically return to the Auto Start ready mode. This shall be a safety feature to prevent a potential health hazard from carcinogenic diesel exhaust leakage from systems having an undesirable open nozzle.
   3. This mode of operation shall be a system override to run the exhaust system blower continuously for the purpose of running the vehicles indoors for equipment checks during inclement weather. Upon activating this mode of operation the exhaust system blower shall start and run continuously until the Stop mode is activated at which point the system will automatically return to the Auto Start ready mode within a maximum three second time period.

G. System Indicator LED's: Show system status at all times.
   1. Auto Start Indicator: Indicate the system is in the fully automatic mode of operation and that power is on to the controller.

2. Fan On Indicator: Indicate that power is being applied to the system blower and the controller is operating normally.
3. Filter Status Indicator: Indicate, if flashing, excessive pressure loss across the filter bank media. Consequently the filter must be serviced to maintain optimum efficiency of the system.
4. Stop Indicator: Indicate the fan has been manually de-energized and will return to the Auto Start ready sequence in less than three seconds to prevent the system blower from being left in the Off mode.
5. Manual Run Indicator: Indicate the fan is operating in a continuous run mode until interrupted by the stop mode activation.

H. Controller Transformer: UL listed industrial control circuit transformer sized to properly supply all components so that only one transformer shall be required. Transformer shall be provided with multi-tap primary for 115, 208, 240, 277, 400, 480, and 600VAC, and 24, 120, 230VAC secondary operating on 50 or 60 hertz with a capacity of 90 volt amperes.

I. Control Circuit Protection: By the use of primary and secondary fuses (NEC code ref. 430-72) to meet UL requirements. The primary shall be protected by a pair of FLQ style fuses rated at 1.6 amps for voltages under 400V and a pair of .75 amp fuses for voltages over 400V. The primary fuse holder shall have a standard indicator light feature to aid in troubleshooting blown fuses. A single glass fuse rated at 3 amps at 250V shall protect the secondary side of the control circuit.

J. Electronic Control Circuit Card: Solid state printed circuit board. The soft controls shall be an integral part of the control circuit card. The control circuit card shall utilize a potentiometer to adjust the length of the timing cycle from 7 to 360 seconds. It shall incorporate several different modes of operation and optional features.

K. Activation Devices:
1. Engine Start Switch: An engine pressure sensing type, capable of recognizing the output pressure of any type of motor vehicle exhaust. The electrical contact shall be dry type or not to exceed 24V ac. There shall be one sensor per vehicle.
2. Thermal Start Switch: Temperature sensing switch of the snap disc type and adjustable from 90 degrees F (32 degrees C) to 130 degrees F (55 degrees C) to configure the system based on different exhaust temperatures. There shall be one sensor per vehicle.
3. Remote Control Transmitter and Receiver: Shall be an optional feature with three independent channels of control. The receiver shall operate on 12V to 24 V AC or DC. The handheld transmitter shall be molded out of a highly visible orange composite with a visor clip on the back making it rugged and easy to locate. It shall be powered by a 9 volt battery for ease of replacement and cost savings. Utilizing three sets of normally open and normally closed contacts allows the device to be used to control three separate functions from up to one quarter of a mile away.
   a. Channel A: Shall be capable of starting and stopping the exhaust system blower.
   b. Channel B: Shall be capable of operating the apparatus bay door upon entering or leaving the fire station, if desired.
   c. Channel C: Shall be capable of remotely controlling the traffic signal in front of the fire station, if so equipped.

L. Clean Filter Indicator Alarm: Used in conjunction with the optional Unifilter for filtering diesel exhaust particulate before release to the atmosphere. The clean filter indicator shall monitor the pressure loss across the filter bank media. Once the useful life of the filter has been depleted the pressure differential switch will signal a high-pressure loss and flash the "Fan On" indicator while the exhaust blower is running.

M. Remote Alarm: To monitor the system and advise when a preset number of emergency runs on the system have accrued.

N. No Airflow Alarm: To monitor the system and advise when the exhaust fan is not functioning properly.

O. Carbon Monoxide Alarm: To monitor the carbon monoxide levels inside the apparatus bay area.

P. Electrical Wiring: Run in wire channel to allow for easier identification of the wiring circuits and for a neat appearance. All wiring circuitry shall meet National Electric Code and UL standards for proper size, bending radiuses (NEC code ref. 300-34) and terminations.

Q. Electrical Terminal Block: 600 V, UL rated and recognized. It shall provide individual connection points for remote controls, clean filter indicator and power connections. The primary and secondary control wiring fuses shall be incorporated into the terminal block as one unit.

R. Product Manual: Shall be provided with each electrical control box supplied. The product manual shall include a description of components with part numbers inclusive to the controller. It shall include a wiring schematic showing all internal circuitry as well as all field installed wiring connections to the controller.

S. Electrical Interference: To protect the apparatus and communications, designs that allow any possibility of electrical back-feed or induced current which may interfere with a central services communication or onboard vehicle computer logic or navigational equipment will not be accepted.

2.17 ELECTRICAL SYSTEM

A. Station Electric Supply Panel: The power circuit for the "Emergency Response Vehicle Exhaust Removal System" shall originate in a circuit breaker panel board of the appropriate size to handle the load. Fan circuit shall be supplied by a UL listed, HACR rated circuit breaker (HACR rating is specifically for motor type loads) of the same type as indicated by the manufacturer of the circuit breaker panel or a dual element time delay fuse for fuse style panels. The circuit shall be clearly marked on an engraved ledger plate or in ink on the panel schedule as "Emergency Response Vehicle Exhaust Removal System".

B. OS-3 Automatic Controller: Built and supplied by a UL recognized and listed exhaust system manufacturer. Controller shall carry the UL - CUL listing label as an "Enclosed Industrial Control Panel". Individual components listed by UL shall not satisfy the above requirement. Manufacturer must undergo monthly inspections by UL to verify all requirements and standards are met as outlined by UL. The controller shall be delivered as an Operating System Three series controller or an approved equal to the specifications in 2.17 Electrical Controllers. The controller shall be mounted 6 feet (1829 mm)to the top of the cabinet AFF (above finished floor). A safety disconnecting means must be within sight of the controller for servicing and for safety reasons. If the supply panel is not within sight, a separate disconnecting means is required beside the controller (NEC code ref. 430-102 (a). Safety disconnect shall be capable of being locked in the off and on position to follow lockout, tag out procedures. See attached Table 1-1 for proper Square D part number of safety disconnect switch.

C. Power Wiring Conduit: Minimum of EMT utilizing compression type fittings for damp locations such as apparatus wash down areas (NEC code ref. 348-10). Conduit shall be supported with a conduit strap every 10 feet and within 3 feet of each box or termination, (International Electrical Code and local modifiers.).

D. Power Wiring from Supply Panel to OS-3: THHN stranded copper wire consisting of a flame retardant, heat-resistant thermoplastic insulation with a nylon jacket for abrasion, gas, and oil resistance and rated up to 600 volts.

E. Low Voltage Control Wiring: Minimum of a 14/2 multi-conductor shielded cable (Anixter part number #2AS-1401POS or equivalent) to meet UL standards for the controller's low voltage field wiring. Termination procedure shall be as follows; the shielded cable shall be stripped back inside the control cabinet, the mylar foil shield and silver drain wire are to be twisted together and secured under the screw in the grounding lug inside the control cabinet. Terminations at each sensor must leave foil shielding and drain wire intact and at no point shall it come into contact with ground. There shall be only one connection to ground.

F. Low Voltage Control: Encased in a minimum of ½ inch (12.7 mm) EMT from the OS-3 Controller to the attic or building steel where it shall terminate with a EMT connector with a threaded plastic bushing. Conduit: Supported with a conduit strap every 10 feet (3048 mm) and within 3 feet (914.4 mm) of each box or termination (NEC code ref.348-13). The 14/2 multi-conductor shielded cable (Anixter part number #2AS-1401POS or equivalent)

shall be supported by the building structure and ran in a manner that the cable will not be damaged by normal building use (International Electrical Code and local modifiers.), securely fastening it with nylon tie wraps every 24 inches (609.6 mm) to 36 inches (914.4 mm). Draping of the cable perpendicular to building steel or support members will be unacceptable.

G. Power Wiring from OS-3 to Fan Motor: Minimum of EMT utilizing compression type fittings for damp locations such as apparatus wash down areas (NEC code ref.348-10). Conduit shall be supported with a conduit strap every 10 feet (3048 mm) and within 3 feet 914.4 mm) of each box or termination (International Electrical Code and local modifiers.). Conduit shall extend through the outside wall through a hole of the proper size and terminate directly into the back of the safety disconnect with the appropriate connector and sealed with a silicon sealer or cement mortar. (Using fan model number select appropriate wire and conduit size from Table 1-1).

H. Fan Safety Disconnect: Square D, non-fusible, NEMA 3R rated for wet locations, mounted adjacent to the AMCA Certified blower. Safety disconnect shall be capable of being locked in the off and on position to follow lockout, tag out procedures. (Using fan model number select appropriate safety disconnect from attached Table 1-1).

I. Liquid Tight Flexible Metal Conduit: UL listed liquidtight flexible metallic conduit (Sealtite). Conduit will encase the load wires and ground wire from the safety disconnect switch to the blower motor. Conduit length not to exceed 4 feet (1219.2 mm) from disconnect to blower motor. The appropriate listed terminal fittings shall be used. (NEC code ref.351-7) (Using fan model select appropriate conduit size from attached Table 1-1).

J. Spark Resistant Blower: AMCA certified, designed and installed as a direct drive spark resistant blower (IMC code ref. 503.2) The motor shall meet current EPACT standards for energy savings. Fans utilizing steel housings and impellers will not be accepted.

K. Temperature Switch: One for each apparatus connected to the system. The temperature switch shall be of the snap disc type and adjustable from 90 degrees F (32 degrees C) to 130 degrees F (54 degrees C). It shall be mounted on the ductwork 2 inches (50.8 mm) above the pressure switch by drilling a 1 inch (25.4 mm) hole, sealing the switch with silicon sealant and securing with 2 tek screws. Electrical connection shall be made with terminals provided or solder less type such as Thomas & Betts part no. 14RB-2577 or equivalent.

L. Pressure Switch: One for each apparatus connected to the system. The pressure switch shall operate at a maximum of 24VAC, pre-calibrated at .18 in. of water column. Mounting shall be accomplished by drilling a 3/8 inch (9.5 mm) hole 3 inches 76.2 mm) above the riser bracket and to the left of the regulator and threading the switch into the duct. The electrical connections shall be made with a 0.020 inch (.5 mm) by 0.187 inch (4.8 mm) female quick disconnect terminals, such as Thomas & Betts part no. 14RBD-18277 or equivalent.

2.18 AIR MOVING DEVICES

A. Centrifugal Fans: Direct drive centrifugal type, high pressure, single width, single inlet as required or indicated. Impeller Wheels: Radial design for high static pressure performance, spark resistance and made of Almag material to prevent static electricity build up. The impeller shall be dynamically and statically balanced and of the non-overloading type to provide maximum efficiency while achieving quiet, vibration-free operation. The fan housing shall be manufactured from a nonferrous material - Almag (or) approved equivalent. The outlet configuration shall be top horizontal, bottom horizontal, or upblast. The housing shall be capable of field reconfiguration in the event the mounting position needs to be changed for unforeseen reasons. For aesthetic reasons the fan motor and assembly shall be mounted on a welded Type 304 stainless steel (ASTM A240/A240M) mounting base to prevent rust stains on the exterior of the building. The fan housing and motor mounting hardware shall be Type 304 stainless steel (ASTM A240/A240M) for serviceability reasons. The base shall have four (4) pre punched openings at bottom of fan base for field attachment to either an exterior wall or roof mounting structure.

B. Fan Motor and Bearing: All 1 horsepower (746 watts) to 15 horsepower (11190 watts) motors shall be totally enclosed fan cooled (TEFC) continuous duty rated. The motors shall be dual voltage where applicable. Motors built after October 27th, 1997 shall comply with the government mandated "Energy Policy and Conservation Act" (EPACT) as outlined by the Department of Energy. The bearings shall be self-aligned, ball bearing type permanently sealed and lubricated. The exhaust discharge outlet shall be in compliance with International Mechanical Code and ACGIH recommendations (min. of 36" above roofline). Air intakes, windows, cascade systems, prevailing currents, communication equipment and building aesthetics shall be considered in the final location of the fan.

1. Teflon Shaft Seal: The fan shaft shall be steel and rotate in a non-sparking TEFLON seal to prevent leakage and to prevent hot exhaust gases from coming into contact with the motor bearings.
2. Variable Speed Drive: The motor shall be compatible with a variable speed drive unit.

C. Performance: The delivered volume shall take into account all the static regain of vehicle engine exhaust (based on an airtight connection at the tailpipe), lengths of ductwork, elbows, branches, shut off, wyes, etc. which accumulate the static pressure at the field inlet. The manufacturer's provided fan(s) shall be performance guaranteed.

1. Fan Capacity: The Fan Capacity shall be sized as such as to deliver the required CFM at each hose drop to which the vehicle is attached.
   a. The 4 inch (101.6 mm) hose system shall be designed to deliver a minimum of 500 CFM (2.9 M/Second) at a velocity of 5800 FPM (33.6 M/Second) at the hose and nozzle connection.
   b. The 5 inch (127 mm) hose system shall be designed to deliver a minimum of 750 CFM (4.4 M/Second) at a velocity of 5800 FPM (33.6 M/Second) at the hose and nozzle connection.
   c. The 6 inch (152.4 mm) system shall be designed to deliver a minimum of 1100 CFM (6.4 M/Second) at a velocity of 5800 FPM (33.6 M/Second) at the hose and nozzle connection.

D. Location: The preferable fan location shall be on the outside of the fire station as far away from any living quarters as possible so that firefighters would not be disturbed by the system activation. No blower fans shall be mounted inside the fire station. Silencers shall be provided when fan sound pressure level exceeds 64 dB.

2.19 DUCTWORK SYSTEM

A. Ductwork Type and Materials: UMC Class 2 or SMACNA Class II product conveying duct, meet or exceed criteria for construction and performance as outlined in Round Industrial Duct Construction Standards, SMACNA. Materials of construction unless otherwise specified for all ductwork and fittings shall be a minimum G-90 galvanized sheet metal (ASTM A653/A653M). Only when specified, Type 304 stainless steel (ASTM A240/A240M) shall be provided.

B. Ductwork Sizing and Gauges: Round pipe construction, with the range of available sizes not to exceed 10 inches (254 mm) in diameter. Duct gauge shall depend on diameter and a minimum operating pressure of 8 inches water gauge (1990 Pa).
Acceptable Gauge and Reinforcement Requirements: Inner duct diameter 4 inches (101.6 mm) through 11 inches (279.4 mm) diameter shall be 22 gauge standard pipe (International Mechanical Code).

C. Ductwork Fittings: Round and have a wall thickness 2 gauges (one even gauge number) heavier than the lightest allowable gauge of the downstream section of duct to which they are connected (International Mechanical Code).
Air Duct Branch Entrances: Factory fabricated fittings or factory fabricated duct /tap assemblies.
Fittings: Constructed so that air streams converge at angles no greater than 45 degree (International Mechanical Code).
All Seams: Continuous stitch welded and if necessary internally sealed to ensure air tightness. Turning elbows shall be stitch-welded and used for all diameters and pressures. They shall be fabricated of 24 gauge galvanized steel and constructed as two

piece with continuous welded seam construction fittings similar to those provided by Lindab Inc.
Tapered Body Fittings: Used wherever particular fallout is anticipated and where air flow is introduced to the transport duct manifold.

D. Ductwork Design Velocities: Minimum of 3500 FPM (20.3 M/Second) to 4000 FPM (23.2 M/Second) transport velocity.
Capture Velocity: 5500 FPM (31.9 M/Second) to 6000 FPM (34.8 M/Second) to extract 100 percent of the exhaust gases.

E. External Ductwork: Sized for the exact inlet and outlet of the exhaust fan blower. An exhaust rain cap shall be supplied and manufactured in accordance with EPA standard for free draft rain cap requirements. A back draft damper shall be Included as an integral part of this rain cap to provide protection from rain and other inclement weather. To protect the fire department's best interest ductwork shall only penetrate exterior walls rather than a roof penetration. In all cases when making a wall penetration through masonry or concrete walls it shall be done by the use of a professional core-drilling machine. Only after all possible avenues for wall penetration are exhausted shall the roof penetration be accepted. The original roofing contractor shall perform the work if possible to ensure any warranties on the existing roof are not voided. If the original roofing contractor can not be notified a licensed roofing contractor shall be used.

F. Exhaust Penetrations: The core drilling shall be properly sized to reduce the diameter of the opening to the smallest possible size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances, service-utility connections, and other conditions affecting installation and performance of equipment. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide surface/substrate preparation as required by the manufacturer's printed installation instructions. Do not proceed with installation is in proper condition to receive vehicle exhaust system installation.

3.3 INSTALLATION

A. Install vehicle exhaust system in accord with manufacturer's written instructions, original design and referenced standards.

3.4 ADJUSTING

A. Adjust vehicle exhaust system for proper operation. Replace any parts that prevent the system from operating properly.

3.5 CLEANING

A. Remove all debris caused by installation of the vehicle exhaust system. Clean all exposed surfaces to as fabricated condition and appearance.

3.6 PROTECTION

A. Provide protection of the completed installation until completion of the project. Repair any damage at no additional cost to Owner.

3.7 TRAINING

A. Provide training to fire department personnel in the daily use and maintenance of the vehicle exhaust removal system that has been installed and specified herein. The fire department shall be notified at least 7 days prior to the date scheduled for the training course. Training shall be for all personnel involved with the operation of the exhaust removal system to include all shifts required to man the particular facility. The Training session shall be performed in person by a recognized representative of the manufacturer

of the exhaust removal system, in addition a training video shall be provided to the fire department.

1. Provide training to all shifts during their normal shift period.

3.8 WARRANTY

A. Provide a written warrantee for a period of one-year on-site service and a two-year from date of shipment for all components.

END OF SECTION 233522

SECTION 233523 - VEHICLE EXHAUST EXTRACTION FIXED EXTRACTOR ON DOUBLE ARTICULATING BOOM

PART 1: GENERAL

1.1 RELATED DOCUMENTS

A. Conditions of the Contract and portions of Division One of this Project Manual apply to this Section though repeated herein.

1.2 SUMMARY

A. Provide all labor, materials, and equipment necessary for complete system.

B. Section Includes:

a. Fixed Exhaust Extractor System on Double Articulating Boom. All components shall be fabricated in strict accord with standards set forth in the current edition of ISO 9002.

1.3 COORDINATION OF TRADES

A. Ductwork offsets, fittings, and any other accessories required shall be furnished as specified to provide a complete exhaust system installation and to eliminate interference with other construction.

1.4 DELIVERY AND STORAGE

A. All equipment delivered and placed in storage shall be housed in a manner to preclude any damage from the weather, humidity and temperature, variations, dirt and dust, or other contaminants. Additionally, all ductwork, flexible connections and pipes shall either be capped or plugged until installed.

1.5 FIELD MEASUREMENTS

A. The Contractor shall become familiar with all details of the work, verify all dimensions in the field.

1.6 SUBMITTALS

A. Materials and Equipment.

a. Manufacturer's catalog data included with the Exhaust System Drawings for all items specified herein. The data shall be highlighted to show model, size, options, etc., that are intended for consideration. Data shall be adequate to demonstrate compliance with all contract requirements. In addition, a complete equipment list that includes equipment description, model number and quantity shall be provided.

B. SD-10 Operation and Maintenance Data.

a. Exhaust System Operation and Maintenance Manuals: Manuals listing step-by-step procedures required for system startup, operation, shutdown, and routine maintenance, at least 14 days prior to on-site training. The manuals shall include the manufacturer's name, model number, parts list, list of parts and tools that should be kept in stock by the Owner for routine maintenance including the name of a local supplier, simplified wiring and controls diagrams, troubleshooting guide, and recommended service organization (including address and telephone number) for each item of equipment.

1.7 JOB REQUIREMENTS

A. The Contractor shall construct, complete and make operational, exhaust system(s) as specified herein. The exhaust system(s) shall provide adequate air exhaust quantities and velocities. All duct shall be properly sized for pressure loss and adequate velocity

including locating intakes, ductwork size, layout, equipment and controls. Construction of the exhaust system shall be based on the referenced publications, and other provisions as specified herein.

B. Detail Drawings: The Contractor shall submit Detail Drawings consisting of a complete list of equipment and materials, including manufacturer's descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions. Detail drawings shall also contain complete duct, wiring, and schematic diagrams and any other details to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall show proposed layout and anchorage of equipment and appurtenances, and equipment in relation to other parts of the work including clearances required for maintenance and operation.

PART 2: PRODUCTS

2.1 FIXED EXHAUST EXTRACTOR ON ARTICULATING BOOM

A. This system shall include a double articulating boom with friction breaks, suspension halter, spring balancer, socket and swivel mount (hose and nozzle specified separately). The system shall be designed to allow for the double articulated boom to be anchored 9.8' to 11.5' off of the ground, provide a 180-degree working radius for the full boom length and 360 degree working radius for the inner boom length. The system shall provide a spring return mechanism to pull the exhaust hose up off the floor when not in use. The system shall provide a 6" diameter exhaust drop and double boom of 9.8' (inner boom *5.1'* outer boom 4.1') lengths.

B. Double Articulated Boom: The double articulated boom shall be of 9.8' (inner boom 5.7' outer boom 4.1 ') length. The double articulated boom shall have an adjustable friction break at the main boom mounting point and the center elbow pivot. Both the main boom pivot and elbow pivot shall be of a double sealed ball bearing design. Arms shall be powder coated black and both exposed sides shall be lined with black and yellow safety tape.

C. Socket: Metal fitting for transition from ductwork to flexible duct.

D. Swivel mount: Suspension hardware designed for overhead mounting to allow for the connection of the suspension balancer. The hardware shall be designed for unlimited swivel.

E. System Balancer Assembly: Self-adjusting weight spring tension balancer with a lifting capacity of no less than 31 pounds (14 KG). The balancer shall have a minimum diameter stainless steel cable of .080 inch (2 mm), safety link connection.

F. Hose Suspension Saddle: Fabricated of a rubber-molded cushion specifically manufactured for the sole purpose of suspending high temperature exhaust ventilation hose in a rapid response and auto-release application. The design of the saddle shall smoothly transition the direction of the hose during its travel along the track. Securing clamps shall be provided including a link fastener, for the purpose of mounting it to the balancer safety link.

PART 3: EXECUTION

3.1 INSTALLATION

A. Work shall be installed as shown and according to the manufacturer's diagrams and recommendations.

3.2 EXHAUST SYSTEM INSTALLATION

A. General Requirements:

a. Welding and brazing shall conform to ASME BVPC SEC IX. Horizontal sections of the main duct shall be installed with the longitudinal lock seam on the top. Slip joints shall be sealed in accordance with SMACNA Rectangle Duct Const. and SMACNA Rnd Duct Const. Riser duct shall be supported and anchored to the structure as indicated. Main duct shall be attached to the structural members of the building as recommended by SMACNA Rectangle Duct Const. and SMACNA Rnd Duct Const.

B. Building Surface Penetrations: Note: Indicate penetration and sleeve and packing details on the drawings in accordance with TM-5-812-2, Section 07 84 00 FIRESTOPPING.

a. Sleeves or framed openings shall be utilized where duct penetrates building surfaces. The space between the sleeve or framed opening and the duct shall be packed with mineral wool or other approved material. Closure collars shall be installed around the duct on both sides of the penetrated surface. Collars shall fit tight against the building surfaces and snugly around the duct.

3.3 FINAL ACCEPTANCE TESTS

A. Each exhaust system and inlet shall be balanced to produce the indicated air quantities within 10 percent at the conditions shown. Control devices shall be set to control at the points indicated or directed. Bearings shall be lubricated, and the speed, direction or rotation of each fan shall be checked. The running current of each motor shall be checked. Upon completion, and prior to acceptance of the installation, the exhaust system shall be tested at operating conditions to demonstrate satisfactory functional and operating efficiency. Operating tests shall be conducted in the presence of the Contracting Officer. If tests do not demonstrate satisfactory operation of the exhaust system, deficiencies shall be corrected and retested. All instruments, facilities, and labor required to properly conduct the tests shall be provided by the Contractor.

3.4 ON-SITE TRAINING

A. The Contractor shall conduct a training course for the operating staff. The training period shall consist of a total eight hours of normal working time and shall start after they system is functionally completed but prior to final acceptance tests. The field instructions shall cover all of the items contained in the approved operation and maintenance manuals, as well as demonstrations of routine maintenance operations. Notify at least 14 days prior to date of proposed conduction of the training course.

END OF SECTION

# SECTION 233524 STRAIGHT RAIL VEHICLE EXHAUST REMOVAL SYSTEM

## PART 1: GENERAL

### 1.1 RELATED DOCUMENTS

A. Conditions of the Contract and portions of Division One of this Project Manual apply to this Section as though repeated herein.

### 1.2 SUMMARY

A. Provide all labor, materials, and equipment necessary to put in working operation a complete turnkey system to remove both diesel and automotive exhaust gases and particulate of operating vehicles within the confines of specified fire station(s). All necessary controls, motors, fittings, ductwork, blower(s), labor and all other equipment and materials specified shall be part of the work.

B. Section Includes:

1. Rail Material.
2. Top Mounting Suspension.
3. Support Legs.
4. Hydraulic Brake System.
5. Rail Splicing Joint.
6. Middle Rail Duct Connection.
7. Trolley Assembly.
8. Regulator Assembly.
9. Uncoupling Valve Assembly.
10. Upper Flexible Hose.
11. Lower Hose Assembly.
12. Safety Disconnect Coupling.
13. Collection Nozzle Assembly.
14. Manual Fill Valve.
15. Hose Saddle.
16. Electrical Controllers.
17. Air Moving Devices.
18. Ductwork System.

C. All items of equipment and materials described in these specifications are to be furnished installed and placed into proper operating condition in accordance with good practice and manufacturer's written or published instructions.

1. The exhaust removal system shall provide 100 percent complete evacuation of all diesel fumes at the source from start up to exit of the apparatus from the fire station. The diesel exhaust removal system shall be capable of delivering complete coverage for bays up to 110 feet in length. The system must be able to accommodate drive through and back-in bays to meet all the needs of the fire department.
2. The system shall not affect personnel boarding the apparatus. Hose loops shall not hang any lower then six feet from the bay floor. The hose assembly shall not come into contact with the vehicle other than one connection point to the vehicles tailpipe. The hose assembly shall not touch or drag on the bay floor.
3. The exhaust system shall not block doorways, exits, and aisles in the apparatus bay, which could endanger the welfare of fire personnel or visitors.
4. To protect the apparatus electrical system from possible damage, the system bid shall not incorporate any type of electromagnetic device that requires the apparatus to be utilized as an electrical ground for systems operation.
5. The system must be designed and capable of capturing 100% of the exhaust gas and particulate even in the event of a complete power failure. The system shall not detach itself from the apparatus for any reason during a power failure other then normal exiting of the apparatus bay. System shall discharge exhaust outside the station even in the event of a power failure.
6. The system shall under no circumstance allow exhaust leakage or bypass the nozzle.

1.3 SUBMITTALS

A. Product Data: Indicate manufacturer's model number, technical data including description of components and static pressure/air flow chart, and installation instructions.
   1. Details of wiring for power differentiating between manufacturer-installed and field-installed wiring.

B. Closeout Submittals: Operation and Maintenance data manual including spare parts list.

1.4 QUALITY ASSURANCE

A. Engage a factory certified experienced installer to perform work of this Section who has completed installations similar in design and extent to that indicated for this Project, and who has a record of successful in-service performance.

B. All components shall be fabricated in strict accord with standards set forth in the current edition of ISO 9002.

C. Engage a firm experienced in manufacturing similar to that indicated for this Project and with a record of successful in-service performance.

D. Conduct conference at Project site. Review methods and procedures related to vehicle exhaust system installation.
   1. Review access requirements for equipment delivery.
   2. Review equipment storage and security requirements.
   3. Inspect condition of preparatory work performed by other trades.
   4. Review structural loading limitations.
   5. Review that all components specified in this Section and related components specified in other Sections are accounted for.

1.5 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading: Deliver hoses with protective packaging. Store in original protective crating and covering and in a dry location.

1.6 PROJECT/SITE CONDITIONS

A. Existing Conditions: Verify dimensions installation areas by field measurements.

1.7 COORDINATION

A. Coordinate layout and installation with other work, including light fixtures, fixed equipment and work stations, HVAC equipment, and fire-suppression system components.

B. Coordinate location and requirements of service-utility connections.

1.8 REFERENCES

A. Air Movement & Control Association International, Inc.
   1. AMCA Standard 500-D-98, "Laboratory Methods of Testing Dampers for Rating".

B. ASTM International.
   1. Stainless Steel:
      a. A240/A240M-04ae1 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
      b. Bright, Directional Polish: No. 4 finish.
   2. Aluminum:
      a. B209/209M-04 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
      b. Powder-Coated Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.
   3. Galvanized Steel:
      a. A653/A653M-04a Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.9 BIDDER QUALIFICATIONS

A. Bids will only be accepted from companies that have an established reputation in the business of system design, turnkey installation and long-term service of Automatic Emergency Response Vehicle Exhaust Removal Systems for a minimum of no less than five (5) years. Bidder shall show proof that the system specified in this Bid Document has been field tested and proven by supplying a list of references with no less than 10 fire departments with systems installed by bidder (with comparable emergency and non-emergency run rates) within the state. References shall be submitted with the Bid Document and shall include phone numbers and contact names.

1.10 MANUFACTURER QUALIFICATIONS

A. Bids shall only be accepted by bidders supplying equipment from manufacturers that have an established reputation in the business of manufacturing Automatic Emergency Response Vehicle Exhaust Removal Systems for a minimum of no less than ten (10) years. System bid shall have a life of service of no less than 10 years to establish proof of quality, longevity and service. Equipment life of service shall meet the department's expectations for similar types of equipment. No exceptions

PART 2: PRODUCTS

2.1 RAIL MATERIAL

A. Rail Material: One-piece continuous extruded aluminum rail in a minimum length of 19 feet (5791.2 mm) in an effort to reduce the points of leakage due to seams or connections. The construction profile shall be of a round profile type, diameter of 6.5 inches (165.1 mm) with a rail thickness of 0.175 inch (4.5 mm). The bottom portion of the rail shall have a continuous slot to accept a rubber seal. Rail Material: Aircraft aluminum alloy Type AA-6063 (ASTM B209/B209M). Aluminum Rail: Extruded as a one piece design unit to maximize the structural integrity of the rail and to minimize joints. Extruded into the rail profile shall be all necessary mounting guides, which will allow for support of the rail mounting hardware and airline support cable. Mounting Channels: Provided continuously along both sides of the rail extrusion in order the proper positioning of all required mounting supports in accordance with codes. The rail shall allow the trolley/hose assembly to glide to the door threshold in a safe and effective manner. The extruded rail channel shall allow the whole rail to remain rigid and shall provide an area to attach bolts for splicing additional rails together for systems over 19 feet (5791.2 mm) long. The overall extruded rail lengths shall be 19 foot (5791.2 mm) standard. Rail System: Equipped with a hydraulic braking system that limits travel of flex hose as the vehicle exits the building. Hydraulic Brake: Incorporated into the end cap of the suction rail.

2.2 TOP MOUNTING SUSPENSION

A. Top Mounting Suspension: Designed to attach with 2 mounting cleats to the mounting slots that were extruded into the rail profile. The top suspension mount support shall be zinc plated bright finish and provided with 2 mounting cleats with four 5/16 inch (7.9 mm) by ¾ inch (19 mm) hex head bolts to attach the mounting support to the rail.

2.3 SUPPORT LEGS

A. Support Legs: Manufactured and provided by the supplier of primary exhaust removal system (Equipment Manufacturer). Support Leg Material: Aircraft aluminum alloy Type AA-6063 (ASTM B209/B209M). Supports: Standard in 19 feet lengths. A minimum of one support with appropriate bracing shall be provided for every 10 lineal feet(3 m) to 12 linear feet (3.7 m) of rail profile. The support legs shall consist of a square outer profile with dimensions no less than 2 inch (50.8 mm) OD by 0.1 inch (2.54 mm) by with 0.4 inch (10 mm) fastening hardware provided. The vertical adjustable mounting foot shall be capable of attaching the leg assembly to a ceiling with a 30 degree pitch, complete with 3/8 inch (9.5 mm) hardware necessary for mounting the leg assembly to the top suspension mount. The support leg shall be equipped with round tubular zinc-plated steel knee brace with pressed ends in standard lengths of 20 inch (508 mm), 30 inch (762 mm)

and 72 inch (1828.8 mm). The angle shall be completely adjustable to the leg support and mounted perpendicular and parallel to direction of the rail. The typical support angle shall be 45 degrees from the centerline of the factory provided support leg. The standard leg shall be capable of meeting a Seismic Zone 4 requirement. Vertical support and bracing shall be provided to safely secure the rail profile in accordance with building code and seismic standards which may apply. A minimum of one support with appropriate bracing shall be provided for every 10 lineal feet (3 m) to 12 linear feet (3.7 m)of rail profile.

2.4 HYDRAULIC BRAKE SYSTEM

A. Hydraulic Brake System: Incorporated into the end cap of the suction rail profile. The hydraulic brake system must incorporate a hydraulic shock capable of reducing the forward impact of 1 to 4 suction trolleys which may be installed now or in the future to the exhaust rail system. This hydraulic shock shall be secured to a steel end cap fabricated of 6.25 inch (158.8 mm) diameter steel tubing with a wall thickness of 0.156 inch (4 mm) welded to a 0.156 inch (4 mm) steel plate with formed 90 degree side rails for rigidity. The end cap shall have a removable circular end plate to facilitate an end feed duct connection and shall be a black powder coated finish. The hydraulic shock shall be capable of reducing to a full stop the trolleys in less than 4 inch (101.6 mm), without physical damage to either the rail profile or trolley that it is stopping.

2.5 RAIL SPLICING JOINT

A. Rail Splicing Joint: The splice joint shall be formed aluminum extrusion equal to the internal diameter of the suction rail profile. The splice shall have a wall thickness of no less than .190 inches (4.8 m) in thickness and a length of no less than 8 inches (203.2 mm) from end to end. The rail splicing shall be safely secured by no less than 12- 3/8 inch 314.3 mm) by 1-½ inch (38.1 mm) bolts, nuts and lock washers. Each bolt shall pass through the exterior of the rail profile and splicing joint and be secured on the inside by a lock washer and nut. Self tapping bolts or screws are not acceptable.

2.6 MIDDLE RAIL DUCT CONNECTION

A. Middle Rail Duct Connection: The rail duct connection shall be rectangular to an 8 inch diameter round transition fitting fabricated from 24 gauge galvanized steel (ASTM A653) with a double rubber U style lip seal. The rectangular slot shall be 19 inch (482.6 mm) long by 1-¾ inch (44.5 mm) high with a 3/8 inch (9.5 mm) external flange to slide into the rail profile.

2.7 TROLLEY ASSEMBLY

A. Trolley Assembly: Gantry type trolley with sealed bearing loaded wheels designed to roll inside the internal rail profile flange. The trolley chassis shall be galvanized steel (ASTM A653) epoxy coated with a black finish. The chassis shall be fitted with a tapered cone. Rubber Sealing Lips: Vulcanized Teflon strip covering 1-½ inch (38.1 mm) of the bottom edge of the sealing lip which shall minimize resistance between the cone and the rubber sealing lips. The exhaust cone transition shall be a tapered slot design which shall fit inside the suction rail profile. The tapered slot shall be equal or exceed in area the diameter of exhaust ventilation hose to which it is attached. Trolley Assembly: Equipped with rubber impact bumpers at both the front and rear of the trolley chassis to eliminate metal to metal contact which could damage the trolley assembly. There shall be a system balancer assembly provided to aid in the delivery of the hose to the exit door. Balancer Assembly: Self-adjusting weight spring tension balancer with a lifting capacity of no less than 31 pounds (31 KG). The balancer shall have a minimum diameter steel cable of .080 inch (2 mm) and have a safety link connection.

2.8 REGULATOR ASSEMBLY

A. Regulator Assembly: Constructed of cast aluminum. The regulator shall safely operate with an input pressure of 0 psi (0 KG/$m^2$) to 200 psi (140614 KG/$m^2$); the output pressure shall be set at 12 psi (8437 KG/$m^2$). Regulator: Attached to each trolley chassis to allow for independent adjustment of each pneumatic collection nozzle. Regulator: Provided with needle type adjustment gauge that is clearly marked with the proper operating range of system.

2.9 UNCOUPLING VALVE ASSEMBLY

A. Uncoupling Valve Assembly: Activate the release of the pneumatic collection nozzle located on vehicle's exhaust pipe. It shall be a whisker type valve that shall provide a single direction action and affixed to a mounting bracket directly onto the trolley chassis. The valve shall be activated when the whisker switch comes in contact with a disconnect plate located on the side of the rail profile. Disconnect Plate: Provide activation of the uncoupling valve switch mounted on the suction trolley chassis. Disconnect Plate: Capable of being mounted anywhere along the outside of the rail in a manner that allows for easy adjustment. One disconnect plate shall be provided for each trolley that is provided to allow for independent adjustment of exit speeds.

2.10 UPPER FLEXIBLE HOSE

A. Upper Hose: Flexible exhaust hose manufactured for the sole purpose of venting high temperature exhaust gases. Flexible Hose: Designed strictly for the harsh environment of rapid response and auto-release of a vehicle exhaust tailpipe. Hose: Range from 4 inch (101.6 mm) to 5 inch (127 mm) diameters with length of 25 feet (7.6 m) without joining or splicing connections. Hose Material: High temperature synthetic rubber impregnated into a high temperature laminated fabric with a minimum overlapping thickness of 2-7/16 inches (61.9 mm). This construction of hose must be capable of operating at continuous temperatures of 400 degrees F (204 degrees C) and intermittent temperatures of 500 degrees F (260 degrees C) such as are experienced when pump checks are performed inside the station. Wire Helix: Bound and protected in laminations of hose winding. This shall be accomplished in a fashion, which eliminates any possibility of personnel coming in contact with an exposed hot metal helix. The hose shall further protect the internal wire helix from heat buildup and in turn add increased visibility to personnel. Wear Strip: 9/16 inch (14.28 mm) wide and be provided as a safety yellow color. The bend radius of the high temperature hose shall be no less than 1.5 times the diameter of hose to ensure that hot gases are not restricted as they pass through the system.

2.11 LOWER HOSE ASSEMBLY

A. Lower Hose: Rigid 4 inch (101.6 mm) to 5 inch (127 mm) diameter by 2 foot (609.6 mm) long section of yellow and black hose identical in appearance to the upper hose assembly. Lower Hose: Support the pneumatic connection nozzle and chrome reducing elbow in a rigid fashion to allow for the operator to place hose collection nozzle onto the tailpipe without bending over. Lower hose is the only section of hose which shall disconnect from the upper hose assembly and act as a safety disconnect in the unlikely event the nozzle gets entangled.

2.12 SAFETY DISCONNECT COUPLING

A. Safety Disconnect Coupling: 4-part segmented coupling with removable wear strips to protect the vehicle and disconnect from wear shall be incorporated in the design of the system. Coupling: Consist of two spun aluminum collars connected by a reusable-segmented coupling band. The release tension of this device shall be preset at 130 pounds and adjustable from 20 pounds to 206 pounds of separating force to accommodate varying exit speeds of vehicles. Coupling: Reusable.

2.13 COLLECTION NOZZLE ASSEMBLY

A. Collection Nozzle Assembly: Provide a substantially air tight seal around exhaust tail pipe when connected thus allowing for 100% source capture. The seal shall not allow for escape of life threatening exhaust gases, which may be present during the following conditions:
   1. In the event vehicle's engine is accelerated above normal idle resulting in an exhaust velocity greater than 5000 feet per minute (25.4 meters per second).
   2. In the event that the output velocity or CFM of the exhaust exceeds the manufacturers normal capture velocity or CFM of exhaust system.

B. Nozzle: Automatically adjust its internal orifice to accept any tailpipe ranging from one inch through six-inch (152.4 mm) diameter. Nozzle Pressure: Not exceed 15 psi (10546 $KG/m^2$). when connected to the vehicle's tailpipe. Nozzle Construction: High temperature synthetic rubber vulcanized to a high temperature synthetic fabric. A NOMEX inner liner shall be provided for the primary temperature source at the tailpipe to act as a friction barrier. The chrome-reducing elbow that connects to the connection nozzle shall be fabricated using continuous welded construction. Angle of Transition: No less than or greater than 67 degrees from the centerline of the reducer. Chrome Reducer: Incorporate a primary expanded metal debris screen, which is permanently affixed by welded seams to the inside opening of exhaust fitting.

2.14 MANUAL FILL VALVE

A. Manual Connection Fill Valve: Located 6 inches (152.4 mm) above safety release coupling approximately 4 feet (1219.2 mm) from floor, sliding/push button type for manual or automatic release. In its design this valve shall incorporate in its design a handle which the operator may easily operate in a standing position. The attachment of the collection nozzle shall not position the operator's breathing zone closer than 36 inches (914.4 mm) from the exhaust tailpipe. The automatic release of the connection valve shall be no greater than 3 psi (2109 $KG/m^2$) shift pressure to activate the automatic nozzle deflation. Primary Air Supply: Accomplished by means of a compression type fitting. The regulated air supply line to collection nozzle shall be designed to safely release from the upper hose at a pressure no greater than 80 lbs. (362.8 KG)

2.15 COMPRESSED AIR FEATURES

A. Airlines: ¼ inch (6mm) OD tubing capable of exposure of high temperature air stream inside the ventilation hose and duct. Airlines: Fed through the exterior of the hose through Teflon and brass grommets. Airlines: Fed through the exterior of the duct through high temperature rubber grommets to protect against abrasion. Unless a fire station air compressor is to be utilized the bidder shall provide a quiet operating compressor to be located proximate to the vehicle bays. It shall also be located so that preventative maintenance can be performed quickly and effectively. The operation of the compressor running inside station shall not generate sound decibels in excess of 50 dB. The compressor shall be equipped with a filter/dryer to ensure the conveyance of clean dry air to the pneumatic controls incorporated in the auto-release ventilation system.

2.16 HOSE SADDLE

A. Hose Suspension Saddle: Fabricated of a rubber molded cushion specifically manufactured for the sole purpose of suspending high temperature exhaust ventilation hose in a rapid response and auto-release application. The design of the saddle shall smoothly transition the direction of the hose during its travel along the track. Securing clamps shall be provided including a link fastener, for the purpose of mounting it to the balancer safety link.

2.17 ELECTRICAL CONTROLLERS

A. Controller: Built and supplied by a UL recognized and listed exhaust system manufacturer. Controller shall carry the UL - CUL listing label as an "Enclosed Industrial Control Panel." Individual components listed by UL - CUL shall not satisfy the above requirement. Manufacturer shall undergo monthly inspections by UL to verify all requirements and standards are met as outlined by UL. The controller shall be delivered

as an Operating System Three series controller or an approved equal to the specifications to follow.

B. Electrical Controllers: Bear a visible UL listing label as proof of subscribership and shall be validated by UL www.ul.com/database/ as an "Enclosed Industrial Control Panel". Certification documents shall accompany bid documents.
   1. Manufacturer Name: _____
   2. UL File No.: _____
   3. Electrical controller and manufacturer shall be recognized and listed by UL. Controller shall be manufactured in accordance with Underwriters Laboratories standard UL-508 for "Enclosed Industrial Control Panels". The electrical controller shall include a Class 1 limited energy control circuit. Enclosures shall be NEMA 12 rated and UL listed as Type 12. The electrical control components shall be provided and mounted in an electrical enclosure to restrict access to internal components of the controller by authorized personnel only.

C. Controller Performance: Designed to sense the output pressure and temperature change inside the ductwork system, which is normally generated by any internal combustion engine designed to propel a motor vehicle. The operating logic shall be designed to complete this cycle. At any point in time when a collection device is connected to a motor vehicle's exhaust tailpipe, as the operator starts the vehicle, the controller shall automatically sense the engine's output pressure or temperature of the exhaust and in turn energize the electrical contactor which will supply power to the AMCA certified spark resistant fan motor. Through the use of an adjustable timer the controller shall keep the contactors energized for up to six minutes in accordance with the stations response requirement. If the responding vehicle does not disconnect from the exhaust ventilation system in less than the designated setting, the temperature override switch shall override the time delay to ensure continuous system operation. This automated function will work for as long as the exhaust gas temperature is in excess of the setting on the heat sensor located in the ductwork system. This cycle shall not allow the electrical contactor, which energizes the exhaust fan, to short cycle or stop the fan while the system is connected to an operating vehicle.

D. Motor Control Contactor: Allen Bradley Industrial Electrical Contactor 100C series. The contactor shall be UL - CUL listed as an approved component.

E. Motor Control Overload Relay: Allen Bradley 193 ES series. Overload relay shall have an adjustable trip range to meet the proper full load amperage of the blower motor.

F. Soft Touch Controls: Incorporated on the face or the access door of the controller by the use of an adhesive backed Lexan membrane type label to prevent water infiltration, which would void the NEMA 12R rating. Label: Provided and secured permanently to the exterior of the electrical controller. Label: Include the name of the manufacturer, address, telephone number, user instructions and any warnings or cautions required by Underwriters Laboratories.
   1. Auto Start: This mode of operation shall be strictly for normal day to day use, as it would apply to receiving an emergency call and leaving the station. Any one or combination of the three devices listed below in Paragraph H shall activate the system. The system shall maintain itself in the Auto Start mode and always return there after the Stop sequence has been initiated. The controller shall not have a permanent off position due to the potential health hazards of diesel exhaust components.
   2. Stop: This mode of operation shall be a system override to shut down the system manually. Upon activating this mode of operation the exhaust system blower shall shut down. After a period not to exceed three seconds the controller shall automatically return to the Auto Start ready mode. This shall be a safety feature to prevent a potential health hazard from carcinogenic diesel exhaust leakage from systems having an undesirable open nozzle.
   3. This mode of operation shall be a system override to run the exhaust system blower continuously for the purpose of running the vehicles indoors for equipment checks during inclement weather. Upon activating this mode of operation the exhaust system blower shall start and run continuously until the Stop mode is activated at which point

the system will automatically return to the Auto Start ready mode within a maximum three second time period.

G. System Indicator LED's: Show system status at all times.

1. Auto Start Indicator: Indicate the system is in the fully automatic mode of operation and that power is on to the controller.
2. Fan On Indicator: Indicate that power is being applied to the system blower and the controller is operating normally.
3. Filter Status Indicator: Indicate, if flashing, excessive pressure loss across the filter bank media. Consequently the filter must be serviced to maintain optimum efficiency of the system.
4. Stop Indicator: Indicate the fan has been manually de-energized and will return to the Auto Start ready sequence in less than three seconds to prevent the system blower from being left in the Off mode.
5. Manual Run Indicator: Indicate the fan is operating in a continuous run mode until interrupted by the stop mode activation.

H. Controller Transformer: UL listed industrial control circuit transformer sized to properly supply all components so that only one transformer shall be required. Transformer shall be provided with multi-tap primary for 115, 208, 240, 277, 400, 480, and 600VAC, and 24, 120, 230VAC secondary operating on 50 or 60 hertz with a capacity of 90 volt amperes.

I. Control Circuit Protection: By the use of primary and secondary fuses (NEC code ref. 430-72) to meet UL requirements. The primary shall be protected by a pair of FLQ style fuses rated at 1.6 amps for voltages under 400V and a pair of .75 amp fuses for voltages over 400V. The primary fuse holder shall have a standard indicator light feature to aid in troubleshooting blown fuses. A single glass fuse rated at 3 amps at 250V shall protect the secondary side of the control circuit.

J. Electronic Control

Circuit Card: Solid state printed circuit board. The soft controls shall be an integral part of the control circuit card. The control circuit card shall utilize a potentiometer to adjust the length of the timing cycle from 7 to 360 seconds. It shall incorporate several different modes of operation and optional features.

The controller shall be compatible with several different types of activation devices and upgradeable without the cost of replacing the whole controller. Systems connected to the apparatus electrical system and transmitting a signal while the vehicle is running will not be acceptable. Systems operating on the popular 390MHz for residential garage door operators will not be acceptable due to potential liabilities.

K. Activation Devices:

1. Engine Start Switch: An engine pressure sensing type, capable of recognizing the output pressure of any type of motor vehicle exhaust. The electrical contact shall be dry type or not to exceed 24V ac. There shall be one sensor per vehicle.
2. Thermal Start Switch: Temperature sensing switch of the snap disc type and adjustable from 90 degrees F (32 degrees C) to 130 degrees F (55 degrees C) to configure the system based on different exhaust temperatures. There shall be one sensor per vehicle.
3. Remote Control Transmitter and Receiver: Shall be an optional feature with three independent channels of control. The receiver shall operate on 12V to 24 V AC or DC. The handheld transmitter shall be molded out of a highly visible orange composite with a visor clip on the back making it rugged and easy to locate. It shall be powered by a 9 volt battery for ease of replacement and cost savings. Utilizing three sets of normally open and normally closed contacts allows the device to be used to control three separate functions from up to one quarter of a mile away.
   a. Channel A: Shall be capable of starting and stopping the exhaust system blower.
   b. Channel B: Shall be capable of operating the apparatus bay door upon entering or leaving the fire station, if desired.
   c. Channel C: Shall be capable of remotely controlling the traffic signal in front of the fire station, if so equipped.

L. Clean Filter Indicator Alarm: Used in conjunction with the optional Unifilter for filtering diesel exhaust particulate before release to the atmosphere. The clean filter indicator shall monitor the pressure loss across the filter bank media. Once the useful life of the filter has been depleted the pressure differential switch will signal a high-pressure loss and flash the "Fan On" indicator while the exhaust blower is running.

M. Remote Alarm: Shall be an optional feature to monitor the system and advise when a preset number of emergency runs on the system have accrued.

N. Mp Airflow Alarm: Shall be an optional feature to monitor the system and advise when the exhaust fan is not functioning properly.

O. Carbon Monoxide Alarm: Shall be an optional feature to monitor the carbon monoxide levels inside the apparatus bay area.

P. Electrical Wiring: Run in wire channel to allow for easier identification of the wiring circuits and for a neat appearance. All wiring circuitry shall meet International Electrical Code and UL standards for proper size, bending radiuses (International Electrical Code) and terminations.

Q. Electrical Terminal Block: 600 V, UL rated and recognized. It shall provide individual connection points for remote controls, clean filter indicator and power connections. The primary and secondary control wiring fuses shall be incorporated into the terminal block as one unit.

R. Product Manual: Shall be provided with each electrical control box supplied. The product manual shall include a description of components with part numbers inclusive to the controller. It shall include a wiring schematic showing all internal circuitry as well as all field installed wiring connections to the controller.

S. Electrical Interference: To protect the apparatus and communications, designs that allow any possibility of electrical back-feed or induced current which may interfere with a central services communication or onboard vehicle computer logic or navigational equipment will not be accepted.

2.18 ELECTRICAL SYSTEM

A. Station Electric Supply Panel: The power circuit for the "Emergency Response Vehicle Exhaust Removal System" shall originate in a circuit breaker panel board of the appropriate size to handle the load. Fan circuit shall be supplied by a UL listed, HACR rated circuit breaker (HACR rating is specifically for motor type loads) of the same type as indicated by the manufacturer of the circuit breaker panel or a dual element time delay fuse for fuse style panels. The circuit shall be clearly marked on an engraved ledger plate or in ink on the panel schedule as "Emergency Response Vehicle Exhaust Removal System". Due to incompatibility of components outsourcing or third party manufacturers will be unacceptable.

B. OS-3 Automatic Controller: Built and supplied by a UL recognized and listed exhaust system manufacturer. Controller shall carry the UL - CUL listing label as an "Enclosed Industrial Control Panel". Individual components listed by UL shall not satisfy the above requirement. Manufacturer must undergo monthly inspections by UL to verify all requirements and standards are met as outlined by UL. The controller shall be delivered as an Operating System Three series controller or an approved equal to the specifications in 2.17 Electrical Controllers. The controller shall be mounted 6 feet (1829 mm)to the top of the cabinet AFF (above finished floor). A safety disconnecting means must be within sight of the controller for servicing and for safety reasons. If the supply panel is not within sight, a separate disconnecting means is required beside the controller (NEC code ref. 430-102 (a). Safety disconnect shall be capable of being locked in the off and on position to follow lockout, tag out procedures. See attached Table 1-1 for proper Square D part number of safety disconnect switch.

C. Power Wiring Conduit: Minimum of EMT utilizing compression type fittings for damp locations such as apparatus wash down areas (International Electrical Code). Conduit shall be supported with a conduit strap every 10 feet (3 m) and within 3 feet (914.4 mm) of each box or termination, (International Electrical Code and local modifiers.).
This shall be used for all supply voltages from 120V through 480V, single or three phase applications. Voltage drop shall be taken into consideration when sizing conductors and

shall not exceed 3 percent, see attached table 1-1 for proper wire gauge (AWG) based on length of run from terminal to terminal.

D. Power Wiring from Supply Panel to OS-3: THHN stranded copper wire consisting of a flame retardant, heat-resistant thermoplastic insulation with a nylon jacket for abrasion, gas, and oil resistance and rated up to 600 volts.

E. Low Voltage Control Wiring: Minimum of a 14/2 multi-conductor shielded cable (Anixter part number #2AS-1401POS or equivalent) to meet UL standards for the controller's low voltage field wiring. Termination procedure shall be as follows; the shielded cable shall be stripped back inside the control cabinet, the mylar foil shield and silver drain wire are to be twisted together and secured under the screw in the grounding lug inside the control cabinet. Terminations at each sensor must leave foil shielding and drain wire intact and at no point shall it come into contact with ground. There shall be only one connection to ground.

F. Low Voltage Control: Encased in a minimum of ½ inch (12.7 mm) EMT from the OS-3 Controller to the attic or building steel where it shall terminate with a EMT connector with a threaded plastic bushing. Conduit: Supported with a conduit strap every 10 feet (3048 mm) and within 3 feet (914.4 mm) of each box or termination (International Electrical Code). The 14/2 multi-conductor shielded cable (Anixter part number #2AS-1401POS or equivalent) shall be supported by the building structure and ran in a manner that the cable will not be damaged by normal building use (International Electrical Code and local modifiers.), securely fastening it with nylon tie wraps every 24 inches (609.6 mm) to 36 inches (914.4 mm). Draping of the cable perpendicular to building steel or support members will be unacceptable.

G. Power Wiring from OS-3 to Fan Motor: Minimum of EMT utilizing compression type fittings for damp locations such as apparatus wash down areas (NEC code ref.348-10). Conduit shall be supported with a conduit strap every 10 feet (3048 mm) and within 3 feet 914.4 mm) of each box or termination (International Electrical Code and local modifiers.). Conduit shall extend through the outside wall through a hole of the proper size and terminate directly into the back of the safety disconnect with the appropriate connector and sealed with a silicon sealer or cement mortar. (Using fan model number select appropriate wire and conduit size from Table 1-1).

H. Fan Safety Disconnect: Square D, non-fusible, NEMA 3R rated for wet locations, mounted adjacent to the AMCA Certified blower. Safety disconnect shall be capable of being locked in the off and on position to follow lockout, tag out procedures. (Using fan model number select appropriate safety disconnect from attached Table 1-1).

I. Liquid Tight Flexible Metal Conduit: UL listed liquid tight flexible metallic conduit (Sealtite). Conduit will encase the load wires and ground wire from the safety disconnect switch to the blower motor. Conduit length not to exceed 4 feet (1219.2 mm) from disconnect to blower motor. The appropriate listed terminal fittings shall be used. (NEC code ref.351-7) (Using fan model select appropriate conduit size from attached Table 1-1).

J. Spark Resistant Blower: AMCA certified, designed and installed as a direct drive spark resistant blower (IMC code ref. 503.2) The motor shall meet current EPACT standards for energy savings. Fans utilizing steel housings and impellers will not be accepted.

K. Temperature Switch: One for each apparatus connected to the system. The temperature switch shall be of the snap disc type and adjustable from 90 degrees F (32 degrees C) to 130 degrees F (54 degrees C). It shall be mounted on the ductwork 2 inches (50.8 mm) above the pressure switch by drilling a 1 inch (25.4 mm) hole, sealing the switch with silicon sealant and securing with 2 tek screws. Electrical connection shall be made with terminals provided or solder less type such as Thomas & Betts part no. 14RB-2577 or equivalent.

L. Pressure Switch: One for each apparatus connected to the system. The pressure switch shall operate at a maximum of 24VAC, pre-calibrated at .18 in. of water column. Mounting shall be accomplished by drilling a 3/8 inch (9.5 mm) hole 3 inches 76.2 mm) above the riser bracket and to the left of the regulator and threading the switch into the duct. The electrical connections shall be made with a 0.020 inch (.5 mm) by 0.187 inch (4.8 mm) female quick disconnect terminals, such as Thomas & Betts part no. 14RBD-18277 or equivalent.

2.19 AIR MOVING DEVICES

A. Centrifugal Fans: Direct drive centrifugal type, high pressure, single width, single inlet as required or indicated. Impeller Wheels: Radial design for high static pressure performance, spark resistance and made of Almag material to prevent static electricity build up. The impeller shall be dynamically and statically balanced and of the non-overloading type to provide maximum efficiency while achieving quiet, vibration-free operation. The fan housing shall be manufactured from a nonferrous material - Almag (or) approved equivalent. The outlet configuration shall be top horizontal, bottom horizontal, or upblast. The housing shall be capable of field reconfiguration in the event the mounting position needs to be changed for unforeseen reasons. For aesthetic reasons the fan motor and assembly shall be mounted on a welded Type 304 stainless steel (ASTM A240/A240M) mounting base to prevent rust stains on the exterior of the building. The fan housing and motor mounting hardware shall be Type 304 stainless steel (ASTM A240/A240M) for serviceability reasons. The base shall have four (4) pre punched openings at bottom of fan base for field attachment to either an exterior wall or roof mounting structure.

B. Fan Motor and Bearing: All 1 horsepower (746 watts) to 15 horsepower (11190 watts) motors shall be totally enclosed fan cooled (TEFC) continuous duty rated. The motors shall be dual voltage where applicable. Motors built after October 27th, 1997 shall comply with the government mandated "Energy Policy and Conservation Act" (EPACT) as outlined by the Department of Energy. The bearings shall be self-aligned, ball bearing type permanently sealed and lubricated. The exhaust discharge outlet shall be in compliance with International Mechanical Code and ACGIH recommendations (min. of 36" above roofline). Air intakes, windows, cascade systems, prevailing currents, communication equipment and building aesthetics shall be considered in the final location of the fan.

1. Teflon Shaft Seal: The fan shaft shall be steel and rotate in a non-sparking TEFLON seal to prevent leakage and to prevent hot exhaust gases from coming into contact with the motor bearings.
2. Variable Speed Drive: The motor shall be compatible with a variable speed drive unit.

C. Performance: The delivered volume shall take into account all the static regain of vehicle engine exhaust (based on an airtight connection at the tailpipe), lengths of ductwork, elbows, branches, shut off, wyes, etc. which accumulate the static pressure at the field inlet. The manufacturer's provided fan(s) shall be performance guaranteed.

1. Fan Capacity: The Fan Capacity shall be sized as such as to deliver the required CFM at each hose drop to which the vehicle is attached.
   a. The 4 inch (101.6 mm) hose system shall be designed to deliver a minimum of 500 CFM (2.9 M/Second) at a velocity of 5800 FPM (33.6 M/Second) at the hose and nozzle connection.
   b. The 5 inch (127 mm) hose system shall be designed to deliver a minimum of 750 CFM (4.4 M/Second) at a velocity of 5800 FPM (33.6 M/Second) at the hose and nozzle connection.
   c. The 6 inch (152.4 mm) system shall be designed to deliver a minimum of 1100 CFM (6.4 M/Second) at a velocity of 5800 FPM (33.6 M/Second) at the hose and nozzle connection.

D. Location: The preferable fan location shall be on the outside of the fire station as far away from any living quarters as possible so that firefighters would not be disturbed by the system activation. No blower fans shall be mounted inside the fire station. Silencers shall be provided when fan sound pressure level exceeds 64 dB.

2.20 DUCTWORK SYSTEM

A. Ductwork Type and Materials: UMC Class 2 or SMACNA Class II product conveying duct, meet or exceed criteria for construction and performance as outlined in Round Industrial Duct Construction Standards, SMACNA. Materials of construction unless otherwise specified for all ductwork and fittings shall be a minimum G-90 galvanized sheet metal (ASTM A653/A653M). Only when specified, Type 304 stainless steel (ASTM A240/A240M) shall be provided.

B. Ductwork Sizing and Gauges: Round pipe construction, with the range of available sizes not to exceed 10 inches (254 mm) in diameter. Duct gauge shall depend on diameter and a minimum operating pressure of 8 inches water gauge (1990 Pa). Acceptable Gauge and Reinforcement Requirements: Inner duct diameter 4 inches (101.6 mm) through 11 inches (279.4 mm) diameter shall be 22 gauge standard pipe (International Mechanical Code).

C. Ductwork Fittings: Round and have a wall thickness 2 gauges (one even gauge number) heavier than the lightest allowable gauge of the downstream section of duct to which they are connected (International Mechanical Code). Air Duct Branch Entrances: Factory fabricated fittings or factory fabricated duct /tap assemblies. Fittings: Constructed so that air streams converge at angles no greater than 45 degree (International Mechanical Code). All Seams: Continuous stitch welded and if necessary internally sealed to ensure air tightness. Turning elbows shall be stitch-welded and used for all diameters and pressures. They shall be fabricated of 24 gauge galvanized steel and constructed as two piece with continuous welded seam construction fittings similar to those provided by Lindab Inc. Tapered Body Fittings: Used wherever particular fallout is anticipated and where air flow is introduced to the transport duct manifold.

D. Ductwork Design Velocities: Minimum of 3500 FPM (20.3 M/Second) to 4000 FPM (23.2 M/Second) transport velocity. Capture Velocity: 5500 FPM (31.9 M/Second) to 6000 FPM (34.8 M/Second) to extract 100 percent of the exhaust gases.

E. External Ductwork: Sized for the exact inlet and outlet of the exhaust fan blower. An exhaust rain cap shall be supplied and manufactured in accordance with EPA standard for free draft rain cap requirements. A back draft damper shall be Included as an integral part of this rain cap to provide protection from rain and other inclement weather. To protect the fire department's best interest ductwork shall only penetrate exterior walls rather than a roof penetration. In all cases when making a wall penetration through masonry or concrete walls it shall be done by the use of a professional core-drilling machine. Only after all possible avenues for wall penetration are exhausted shall the roof penetration be accepted. The original roofing contractor shall perform the work if possible to ensure any warranties on the existing roof are not voided. If the original roofing contractor can not be notified a licensed roofing contractor shall be used.

F. Exhaust Penetrations: The core drilling shall be properly sized to reduce the diameter of the opening to the smallest possible size.

## PART 3EXECUTION

### 3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances, service-utility connections, and other conditions affecting installation and performance of equipment. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Provide surface/substrate preparation as required by the manufacturer's printed installation instructions. Do not proceed with installation is in proper condition to receive vehicle exhaust installation.

### 3.3 INSTALLATION

A. Install vehicle exhaust system in accord with manufacturer's written instructions, original design and referenced standards.

### 3.4 ADJUSTING

A. Adjust vehicle exhaust system for proper operation. Replace any parts that prevent the system from operating properly.

### 3.5 CLEANING

A. Remove all debris caused by installation of the vehicle exhaust system. Clean all exposed surfaces to as fabricated condition and appearance.

3.6 PROTECTION

A. Provide protection of the completed installation until completion of the project. Repair any damage at no additional cost to Owner.

3.7 DEMONSTRATION

A. Provide the end user a minimum of one hour of hands-on demonstration and operation of the vehicle exhaust system and related equipment.

3.8 WARRANTY

A. Provide a written warrantee for a period of one year from date of shipment for all components.

3.9 TRAINING

A. Provide training to fire department personnel in the daily use and maintenance of the vehicle exhaust removal system that has been installed and specified herein. The fire department shall be notified at least 7 days prior to the date scheduled for the training course. Training shall be for all personnel involved with the operation of the exhaust removal system to include all shifts required to man the particular facility. The Training session shall be performed in person by a recognized representative of the manufacturer of the exhaust removal system, in addition a training video shall be provided to the fire department.

1. Provide training to all shifts during their normal shift period.

END OF SECTION 233524

SECTION 260500 - ELECTRICAL WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions and Supplementary Conditions are applicable to all contracts for the project.

1.2 DESCRIPTION OF WORK

A. The work included under this Section consists of providing all work, supervision, and construction procedures necessary for the installation of the complete electrical systems required by these specifications and/or shown on the drawings of the contract.

B. Connect Vehicle Exhaust System provided by Mechanical Contractor as specified and indicated on drawings, in accordance with the manufacturer's instructions and recommendations. Furnish and install complete electric connections and devices as recommended by the manufacturer or required for proper operation.

C. Prior to bidding, become familiar with the mechanical specifications and drawings.

1.3 ACCESS TO EQUIPMENT

A. Starters, switches, receptacles, pull boxes, etc., shall be located to provide for easy access for operations, repair and maintenance; if concealed, access doors shall be provided.

1.4 SHOP DRAWINGS

A. The Contractor shall furnish shop drawing portfolios and proper transmittal forms for all materials, equipment, and lighting fixtures to be incorporated in the work, in accordance with the General Conditions, Supplementary Conditions, and all other applicable Conditions.

B. Shop drawings on component items forming a system or that are interrelated shall be submitted at one time as a single submittal in order to demonstrate that the items have been properly coordinated and will function properly as a system. A notation shall be made on each shop drawing submitted as to the items specific use, either by a particular type number referenced on the drawings or in the specifications, or by a reference to the applicable paragraph of the specifications or by a description of its specific location. The shop drawings shall be organized and bound into sets with each set collated. A minimum of four copies shall be submitted.

C. Contractor shall provide an index page for each system or set listing the type of device and the model number of the device to be furnished.

1.5 CODES AND STANDARDS

A. The electrical work shall be in accordance with all applicable state and local codes, building ordinances and the N.E.C. The electrical work shall merit the approval of the state and local enforcing authorities.

1.6 PERMITS AND FEES

A. The Contractor shall obtain all permits required for work under this section, associated fees shall be waived.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. All materials shall be new and of the quality specified. Materials shall be standard products of manufacturer's regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design. Electrical material and equipment used in the work shall meet the requirements as specified under paragraph three of this section, CODES AND STANDARDS.

B. All work installed under this Division of the Specifications shall be first class and complete in both

effectiveness and appearance, whether finally concealed or exposed, and shall be executed by experienced mechanics.

2.2 OUTLET BOXES, PULL BOXES AND CONDUIT FITTINGS

A. Furnish and install outlet boxes, pull boxes, and conduit fittings as described below. Catalog numbers shown are Appleton Electric Company. Equal materials by Steel City, O.Z., and Raco, are acceptable.

B. OUTLET BOXES

1. Receptacle Boxes - 4S-3/4 with 8360 or 8370 Series raised
   (Exposed) - surface cover.

C. Where space is limited, No. 4CS-3/4 handy boxes may be used for switch, receptacle and telephone outlets with specific approval only.

D. Outlet boxes shall comply with the National Electrical Code in regard to the allowable fill.

2.3 PULL BOXES

A. Pull boxes shall be fabricated of code gauge galvanized sheet metal and shall be sized in accordance with National Electrical Code requirements, or as shown on the drawings. Provide removable cover on the largest access side of the box. In-line conduit pull boxes may be O.Z., Type PBW, or equal.

2.4 RACEWAYS AND FITTINGS

A. Types Permitted

1. Steel Conduit: Rigid steel conduit, intermediate conduit and electric metallic tubing shall be hot dipped, galvanized as manufactured by Youngston Sheet and Tube Company, National Electric or equal.
2. Liquid-Tight Flexible Metal Conduit: Provide liquid-tight flexible metal conduit; construct of single strip, flexible, continuous, interlocked, and double-wrapped steel; galvanized inside and outside; coat with liquid-tight jacket of flexible polyvinyl chloride (PVC).
   a. Use for final 36" connection to vibrating equipment in truck bays due to water spray or dripping oil, water, or grease
3. Metal Clad Cable – Final connection to recessed light Fixtures not exceeding 6 foot in length.

B. Raceways shall be installed concealed whenever possible. Surface mounted conduit may be used in unfinished areas such as storage rooms, mechanical rooms, janitor closet and truck bays. When installing conduit between floors route conduit up through unfinished rooms such as those mentioned above.

C. Joints. All threaded joints shall be made up wrench-tight and all compression joints shall be made up mechanically secure and snug so as to make continuous current-carrying electrical contact.

1. EMT Fittings: Fittings for EMT shall be steel and may be of the screw or compression type. Cast or indenter fittings are not acceptable.

D. No conduit shall be smaller than 1/2 inch and not larger than 1 inch for multiple branch circuits.

2.5 CONDUCTORS

A. All conductors shall be 600 volt and shall be copper with THWN or THHN insulation. No wire shall be smaller than No. 12 for power circuits.

B. Low voltage control wires shall be 600 volt, copper and no smaller than No 14. See mechanical specifications 15750(2.9) for manufacturer's recommended conductors.

C. All wires shall be installed in conduit.

D. Conductors shall be continuous from outlet to outlet and no splices shall be made except within outlet or junction boxes. Junction boxes may be used where required.

2.6 ELECTRICAL PANELS

A. Lighting and Appliance Panelboards: Provide dead-front safety type lighting and appliance panelboards as indicated, with switching and protective devices in quantities, ratings, types and arrangements shown; with anti-turn solderless pressure type lug connectors approved for copper or aluminum conductors, full-sized neutral bar, with bolt-on type heavy-duty, quick-make, quick-break, single-pole or multi-pole circuit- breakers, as indicated, with toggle handles that indicate when tripped. Multipole breakers shall be provided with a common trip. Provide suitable lugs on neutral bus for each outgoing feeder required; provide bare uninsulated grounding bars suitable for bolting to enclosures.

1. Lighting and Appliance Panelboards shall be type:

| | 240V | 480V |
|---|---|---|
| | Bolt-on | Bolt-on |
| General Electric | AQ | AD, AE |
| Siemens | P1 | P1 |
| Square D | NQOD | NEHB |
| Cutler-Hammer | PRL1, PRL2 | PRL2, PRL3 |

2. Breakers shall be fully rated and shall have an interrupting capacity as indicated on drawings. Series rating shall be acceptable for panelboards rated more than 10,000 A.I.C.

2.7 SAFETY SWITCHES

A. Furnish and install heavy-duty type safety switches having the electrical characteristics, ratings and modifications shown on the drawings. All switches shall have:

B. NEMA 1 (indoor) enclosures unless otherwise noted;
   1. Handle that is pad lockable in "OFF" position;
   2. Non-teasible, positive quick-make, quick-break mechanism;
   3. UL approval and shall bear the UL label;
   4. All fusible switches shall have Class R fuse rejection clips which will provide 200,000 AIC.
   5. Exterior mounted switches shall be weatherproof NEMA 3R type and shall be field modified to be lockable in the "ON" position.

2.8 MANUFACTURERS

A. Panelboards, safety switches and motor controllers manufactured by Westinghouse, Square D, ITE, Cutler Hammer, or General Electric are acceptable. All major components shall be of the same manufacturer.

2.9 FUSES

A. Fuses shall be furnished and installed in each fused switch, and shall have ratings as shown on the drawings.

B. All cartridge fuses shall be dual element Bussman Fusetron Class R Type unless otherwise noted. Three spare fuses shall be furnished for each size used. Each fused switch shall be provided with a mastic backed label clearly identifying the type and size of fuse required. Bussman HICAP Class R fuses shall be provided for fuses larger than 600 amps.

2.10 WIRING DEVICES

A. All wiring devices shall be suitable for intended purpose and shall be UL listed.
   1. All outlets shall be located as shown on the drawings except that where practicable, outlets shall be located in center of panels or trim or otherwise symmetrically located to conform with existing structural layout. Outlets incorrectly installed shall be corrected. Damaged items or damaged finishes shall be repaired or replaced at no expense to the Owner.
   2. Outlets shall be set plumb or horizontal and shall extend to the finished surface of the walls, ceiling or floor, as the case may be, without projecting beyond same.

B. Where shown on the drawings, furnish and install wiring devices indicted by the symbols.

Wiring devices shall be products Pass & Seymour, or equal. Catalog numbers shown below are Pass & Seymour . Equal devices manufactured by Hubbell, Leviton, or General Electric shall be acceptable.

C. Receptacles. All receptacles shall be side wired, self-grounding of the type indicated as follows:

Duplex Convenience Receptacles 5352 Series – Gray
20A-125V (Grounding Type)

D. Mount receptacles in raised galvanized steel cover for 4" square box.

PART 3 EXECUTION

3.1 INSTALLATION METHODS

A. Conductors shall be installed in concealed raceways except as shown or specified on the Contract Documents. Exposed conduits and wires shall be installed parallel or perpendicular to all building surfaces. Conduits and wires in the space above ceilings shall be supported adequately and not laid on the top of ceiling systems. All conduits and wires installed above ceilings shall be considered exposed.

B. Electrical conduits shall not be hung on hangers with any other service foreign to the electrical systems, nor shall they be attached to other foreign services.

C. The lighting and power branch circuit conductors shall be installed in separate raceway systems unless specifically shown or noted otherwise. Emergency and normal circuit conductors shall also be installed in separate raceway systems unless specifically shown or noted otherwise.

3.2 ELECTRICAL ROOM COORDINATION

A. Where a number of electrical panels and/or related electrical items are shown, the Electrical Contractor shall coordinate the physical sizes with his equipment suppliers to ensure that there is adequate space for the items shown to be installed in those areas and that all Code required clearances are maintained.

B. The Contractor shall rearrange the equipment layout to achieve full use of the available space prior to installing conduit stub ups. Where a conflict or rearrangement exists, the Contractor shall submit a proposed revised layout of the area to the Architect.

3.3 WIRING - NUMBER OF WIRES REQUIRED

A. The number of wires for lighting and receptacle branch circuits are not shown on the drawings. The number of wires in any circuit shall be determined in accordance with the National Electrical Code, and wiring shall be provided to perform all functions of the devices being installed. Additionally, wires shall be provided as required by the contract documents, i.e. equipment grounds, etc. Provide the number of wires required for a complete and workable system.

3.4 GROUNDING

A. Green equipment grounding conductor shall be installed in each power conduit. Conduits containing only low voltage control wires shall not be required to have an equipment ground.

B. Grounding and bonding of electrical circuit and equipment shall be accomplished as set forth in the NEC and as shown on the drawings.

C. For building #43, the service entrance shall be grounded to the water pipe per table 250-94 with a minimum of one 5/8" x 10'-0" supplemental ground rod with #6 wire. If sufficient the existing grounding electrode may be used. The Contractor shall provide testing and additional ground rods where required to ensure the resistance is 25 OHMs or less.

3.5 PANEL DIRECTORY

A. Panels shall have combination cardholder and nameplate. Panels shall be equipped with typewritten directory placed behind clear plastic, identifying all loads served with the circuit number, breaker size and number of poles for each. All spaces and spare circuits shall be indicated with erasable pencil, not typed. Existing panel directories shall be updated accordingly.

3.6 PAINTING, FINISHING

A. Painting of electrical work exposed in occupied spaces, except mechanical and electrical machine rooms and maintenance/service spaces; and work exposed on the exterior is specified and performed under other divisions of these specifications.

B. Factory finishes, shop priming, and special protective coatings are specified in the individual equipment specification sections.

C. Where factory finishes are provided on equipment and no additional field painting is specified, all marred or damaged surfaces shall be touched up or refinished so as to leave a smooth, uniform finish at the time of final inspection.

3.7 SLEEVES

A. Sleeves shall be used to accommodate conduit or tubing where conduit or tubing passes through concrete walls or slabs.

B. All sleeves through floors and walls shall be black iron pipe, flush with walls or finished floors; and of sizes to accommodate the raceways shown. Sleeves through outside walls above grade shall be caulked with approved caulking compound. Sleeves shall not be required through on grade slabs.

C. Install manufactured floor and thru wall seals, similar to Type "FSK" as manufactured by O.Z. Electric Manufacturing Company.

3.8 CABLE AND CONDUIT SEALS

A. Seals shall be provided around conduits and cables that penetrate smoke walls, firewalls, and floors. Nelson Flameseal system shall be used to seal penetrations of electrical cables and conduits.

B. Materials used shall be as follows:

1. Flameseal putty.
2. Ceramic fiber insulation.
3. Ceramic fiberboard shall be required to provide rigid support on large oversized openings. Board shall be rigid and able to withstand temperatures in excess of 2000 degrees F.
4. Accessory hardware shall be required on oversized openings.

C. Follow manufacturer's instructions in selecting the type of seals and accessories. Also follow the manufacturers instructions on installation of the cable and conduit seals.

D. Equal quality equipment by OZ Gedney and 3M shall be acceptable.

3.9 ACCESS PANELS

A. Furnish and install panels for access to junction boxes and similar items where no other means of access, such as a readily removable, sectional ceiling is shown or specified.

B. Panels shall not be less than 12-inches by 16-inches in size. Larger panels shall be furnished where required. Panels in tile or other similar patterned ceilings shall have dimensions corresponding to the tile or pattern module.

C. Access panels shall be flush type and of all steel construction, with No. 16 gauge wall or ceiling frame for masonry or plaster and a No. 14 gauge panel door. Doors shall be secured with concealed hinges and flush locks of either the cylinder type or approved, positive acting, screwdriver operated type. Doors for wall panels may be secured with suitable clips and countersunk screws. Panels shall be painted with a rust-inhibitive primer at the factory.

3.10 WORK IN EXISTING BUILDING

A. Where drawings indicate work to be done in the existing building, the Contractor shall carefully examine such areas to determine the nature and extent of work involved before submitting his bid. The Contractor shall be responsible for all damage to existing items and utilities due to the

progress of his work, and shall repair all such items or replace same to an approved condition at his own expense.

B. Where new loads are shown or noted to be added to existing circuits, the Contractor shall field verify the existing and new circuit amperages so that the total does not exceed 80% of the breaker size.

C. Contractor shall field verify existing service and panel voltages to ensure compatibility of the new equipment.

3.11 REMOVAL WORK

A. All existing devices shown with hatching and/or so noted shall be removed, relocated, remain or shall be abandoned as noted on the drawings.

3.12 CUTTING AND PATCHING

A. The Contractor shall be responsible for all cutting and patching of holes in the building which are required for the electrical work. Cutting, patching and painting shall conform to the requirements of the General Conditions of this specification.

B. Cutting of structural framing, walls, floors, decks and other members intended to withstand stress is not permitted.

C. All patching shall be finished and painted to match existing.

3.13 COORDINATION

A. Coordinate the locations and purchasing of equipment between other trades to ensure proper interfacing and placement of equipment requiring electrical power.

B. Coordinate other work of the different trades so that:

1. Interferences between mechanical, electrical, architectural, and structural work, including existing services, are avoided.
2. Within the limits indicated on the drawings, the maximum practicable space for operation, repair, removal and testing of electrical, and other equipment will be provided.
3. Pipe, conduits, ducts, and similar items, shall be kept as close as possible to ceilings, walls, columns, to take up a minimum amount of space. Pipes, conduits, ducts, and similar items shall be located so that they will not interfere with the intended use of other equipment.

3.14 EXISTING UTILITIES

A. Existing utilities within the contract limits shall be rerouted and/or abandoned as shown on the drawings. The Contractor shall verify the location of all existing utilities with the Owner and Utility Companies prior to commencing excavation work. All new or rerouted work must be in place before removal of existing work. All service outages must be scheduled with the Owner and be approved 24 hours in advance of any outage.

3.15 PROTECTION

A. Protection of existing equipment and facilities shall be provided by the contractor and coordinated with the Owner.

3.16 OUTAGES

A. All outages shall be scheduled and approved by the Owner a minimum of 24 hours in advance of such outage.

3.17 MOUNTING HEIGHTS

A. Mounting heights to center of box and above finished floor for the below-named items shall be as follows, unless otherwise shown. All other device mounting heights shall be as shown on the drawings. All devices shall be mounted in accordance with ADA (Americans With Disabilities Act) requirements.

1. Convenience outlets with ground prong slot at top — 18" mounted vertically

| | | |
|---|---|---|
| 2. | Safety switches | 54" |
| 3. | Motor controllers | 54" |
| 4. | Panelboards to top | 72" |
| 5. | Convenience outlets in mechanical, electrical, janitor and truck bays | 48" |

B. Contractor shall check all equipment layouts and verify exact mounting heights.

3.18 NAMEPLATES

A. Nameplates shall be provided and installed on the front exterior of all new items such as panelboards, cabinets, motor controllers (starters), safety switches, and other significant equipment.

1. Nameplates shall be 1" x 2-1/2" laminated black phenolic resin with a white core with engraved lettering, a minimum of 3/16-inch high. Manufacturers factory installed nameplates shall be acceptable provided all information is furnished. Branch circuits of motor control centers, switchboards, power panels and distribution panels shall also have nameplates.
2. Nameplates shall provide the following minimum amount of information: Identify the device name (main switch, double throw switch, automatic transfer switch, Panel "A", AC fail, surge protection) amperage, voltage, phase, the equipment it serves and from where the device is being fed from. Nameplates shall be installed to the front of the equipment enclosure using two metal screws.

   Example:
   60A, 240V, 1 Phase Disc. Sw.
   Serves PCU-1 from
   Panel "A"

3. Nameplate fasteners shall be self-tapping stainless steel screws, except permanent adhesive type may be used where screws cannot or should not penetrate the housing.

3.19 TESTS

A. General

1. Test all new and disturbed electrical work as required to comply with N.E.C., I.C.B.O. and other applicable codes and ordinances.

B. Grounding Systems

1. Conduit systems shall be checked for "grounds" at convenient points such as outlets which are located near plumbing systems or building structural steel.
2. When applicable, check system neutrals and equipment grounding conductors separately for opens, shorts and unintentional grounds before interconnection to the grounding system.

3.20 AS-BUILT DRAWINGS

A. Contractor shall provide the Owner as-built drawings for all systems including electrical and special systems described in specifications. This shall consist of all drawings, wiring schematics, and diagrams for the new systems, as well as any changes to the existing systems as shown on the drawings.

END OF SECTION 260500

# Special Provisions
# Fire Station 12 Vehicle Exhaust Removal System Upgrade

**1. GENERAL ITEMS**

1.1 The project will require a payment/performance bond at the time of the bid submittal.
1.2 The completion date for the project shall be 45 working days after the notice of award.
1.3 The project is exempt from sales tax.

**2. MECHANICAL ITEMS**

2.1 All existing exhaust fans will be replaced with new fans.
2.2 Silencers will be required for all fans as specified and shown on the plans.
2.3 Refer to mechanical equipment schedules.
  2.3.1 Note #4 should read: "Magnagrip AND Nederman and other approved equals are acceptable for bid, but the contractor shall be responsible for required changes in design."
2.4 Refer to specification section 233522 under 1.9 bidder Qualifications.
  2.4.1 Bidders must provide 10 references as prescribed by this section.
  2.4.2 The references will not be required to be within a 250 mile radius.
2.5 Roof and wall penetrations will be reused whenever possible as noted on the plans.
2.6 All exhaust track equipment and ductwork shall be mounted on Unistrut directly anchored the building structure.
  2.6.1 Anchors penetrating only drywall or plaster/lath shall not be acceptable.
  2.6.2 Garage door support members shall not be used for structural support.
  2.6.3 Refer to spec section 230513 1.7 Cutting and Patching for cutting and patching requirements.

**3. ELECTRICAL ITEMS**

3.1 Electrical Contractor to conceal conduit whenever possible.
  3.1.1 When wiremold is required, utilize wiremold 700 series painted to match ceiling or wall in hallways and living areas.
  3.1.2 Exposed conduit is acceptable in the Apparatus bays.
3.2 All low voltage control wiring between apparatus bay exhaust fan and control panel to be in ¾" conduit.
3.3 Exhaust fan EF-1's motor starter should be 30amp in lieu of 60amp in Fire Stations #3, 5, 6, 9, 10 & 14.
3.4 See attached wiring diagram for the exhaust fan and the control panel for additional electrical information.
  3.4.1 See attached sketch sheet SD-E002.
3.5 See attached typical electrical floor plan for wiring and circuit changes.
  3.5.1 The dedicated circuit for the control panel was not required (see attached wiring diagram).
  3.5.2 See attached sketch sheet SD-E001.

## ELECTRICAL KEYED NOTES:

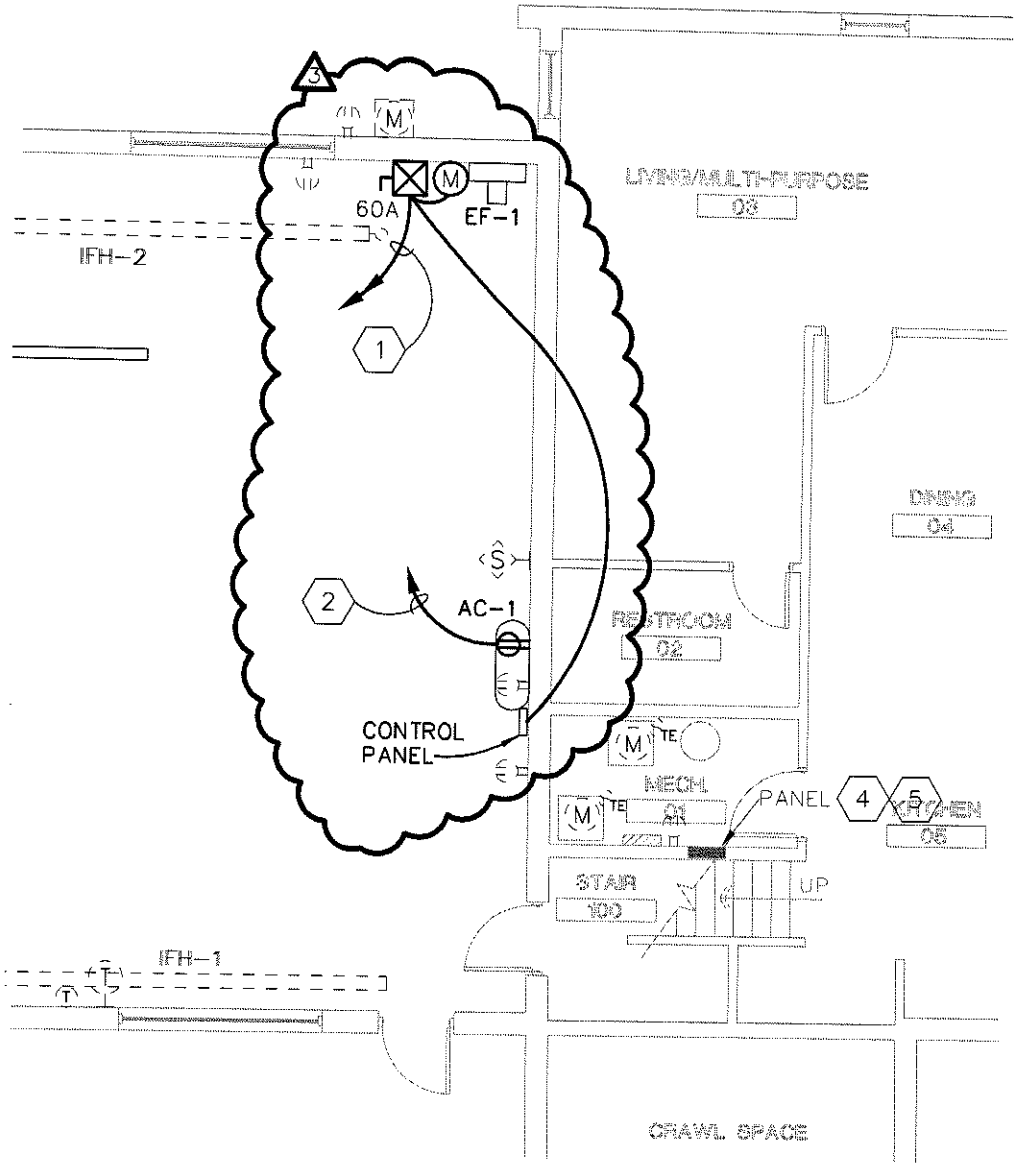
1. ROUTE 2#12 & 1#12GRND IN 3/4"C FOR NEW APPARATUS BAY EXHAUST FAN EF-1 TO NEW 20AMP, 2-POLE BREAKER IN EXISTING PANEL LOCATED IN EXISTING MECHANICAL/ELECTRICAL ROOM, NEW BREAKER WILL BE INSTALLED IN SLOTS #2,4, MATCH EXISTING AIC RATING. MOUNT MOTOR STARTER ON WALL NEAR EXHAUST FAN. SEE CONTROL PANEL AND EXHAUST FAN WIRING DIAGRAM. 3

2. ROUTE 2#12 & 1#12GRND IN 3/4"C TO SPARE 20AMP, 1-POLE BREAKER SLOT #25 IN EXISTING 200A PANEL LOCATED IN FIRST FLOOR MECHANICAL/ELECTRICAL ROOM FOR NEW WALL MOUNTED RECEPTACLE SERVING NEW 2 HP AIR COMPRESSOR, COORDINATE MOUNTING HEIGHT OF RECEPTACLE WITH MECHANICAL AND EXISTING CONDITIONS.

3. NOT USED. 3

4. EXISTING 200AMP, 120/240V, 1ø PANEL. REMOVE EXISTING 25AMP, 2-POLE BREAKER SERVING DEMO'ED APPARATUS BAY EXHAUST FAN. SEE NOTE #1 FOR NEW BREAKER INSTALLATION.

5. ELECTRICAL CONTRACTOR TO METER EXISTING PANEL FOR EXISTING LOAD TO VERIFY CAPACITY FOR ADDED LOAD.




3 ADDENDUM #3



Supplemental Drawing No.: SD-E001

Scale: NOT TO SCALE
Reference Sheet: EP4.1

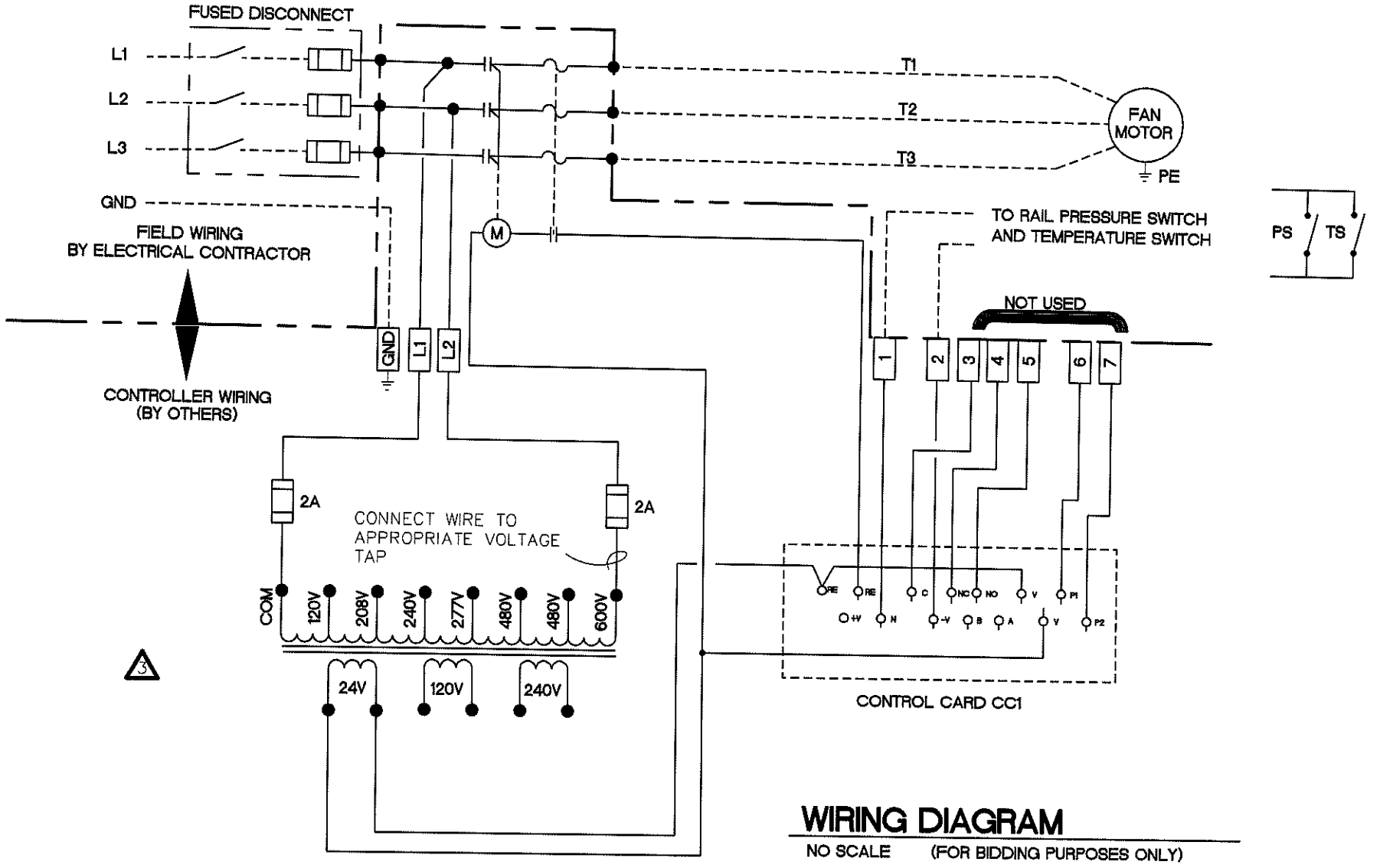
Date: 09.18.2006
MEG File No.: 637.001

Client/Architect: City of Lincoln
Project No.:

# Lincoln Fire Stations Diesel Exhaust Systems

Lincoln, Nebraska

M.E. GROUP, INC.
ENGINEERS • CONSULTANTS
http://www.megroup.com




## WIRING DIAGRAM

NO SCALE (FOR BIDDING PURPOSES ONLY)

3 ADDENDUM #3



Supplemental Drawing No.: SD-E002

Scale: NOT TO SCALE
Reference Sheet: N/A

Date: 09.18.2006
MEG File No.: 637.001

Client/Architect: City of Lincoln
Project No.:

# Lincoln Fire Stations Diesel Exhaust Systems

Lincoln, Nebraska

M.E. GROUP, INC.
ENGINEERS • CONSULTANTS
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# INSURANCE REQUIREMENTS
# FOR ALL CITY CONTRACTS

## 1. GENERAL PROVISIONS

A. **Indemnification.** The Contractor shall indemnify and save harmless the City of Lincoln, Nebraska from and against all losses, claims, damages, and expenses, including attorney's fees, arising out of or resulting from the performance of the contract that results in bodily injury, sickness, disease, death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom and is caused in whole or in part by the Contractor, any subcontractor, any directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. This section will not require the Contractor to indemnify or hold harmless the City of Lincoln for any losses, claims, damages, and expenses arising out of or resulting from the sole negligence of the City of Lincoln, Nebraska.

B. **Approved Coverage Prior to Commencing Work/Subcontractors Included.** Contractor shall purchase and maintain in place insurance to Protect Contractor and City against all liabilities and hazards as provided in this article throughout the duration of the Contract. Contractor shall not commence work under this contract until the Contractor has obtained all insurance required under this Section and such insurance has been approved by the City Attorney for the City of Lincoln, nor shall the Contractor allow any subcontractor to commence work on any subcontract until all similar insurance required of the subcontractor has been so obtained and approved.

C. **Occurrence Basis Coverage.** All insurance shall be provided on an ***occurrence basis*** and not on a claims made basis, except for hazardous materials, errors and omissions, or other coverage not reasonably available on an occurrence basis; provided that all such claims made coverage is subject to the prior written approval of the City Attorney and must be clearly indicated as such in any certificate showing coverage.

D. **Authorized and Rated Insurers Required.** All insurance coverage are to be placed with insurers authorized to do business in the State of Nebraska and must be placed with an insurer that has an A.M. Best's Rating of no less than A:VII unless specific approval has been granted by the City Attorney.

E. **Certificates Showing Coverage.** All certificates of insurance shall be filed with the City Attorney, and may utilize an appropriate standard ACORD Certificate of Insurance form showing the specific limits of insurance coverage required by this Article; provided that restrictions, qualifications or declarations inconsistent with the requirements of this Article shall not relieve the Contractor from providing insurance as required herein. Such certificates shall show the City of Lincoln as additional insured, including by specific endorsement where necessary, as indicated in the following requirements. Such certificate shall specifically state that the related insurance policies are to be endorsed to require the insurer to provide the City of Lincoln thirty days, notice of cancellation, non-renewal or any material reduction in the stated amounts or limits of insurance coverage.

F. **Terminology.** The terms “insurance,” “insurance policy,” or “coverage” as used in this article are used interchangeably and shall have the same meaning as “insurance” unless the context clearly requires otherwise. References to “ISO®” forms are merely for convenience and ease of reference, and an equivalent or better form as determined acceptable by the City Attorney may be used. (Note: ISO® is a registered trademark of ISO Properties, Inc.)

## 2. INSURANCE REQUIREMENTS

A. **Scope of Required Coverage**. The Contractor shall take out and maintain during the life of Contract such insurance in the forms and minimum amounts as specified in this Article and as will protect Contractor and City from the following claims arising out of or resulting from or in connection

with the Contractor's operations, undertakings or omissions directly or indirectly related to the Contract, whether by the Contractor or any Subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

(1) Claims under workers' compensation, disability benefit, or other employee benefit acts;

(2) Claims arising out of bodily injury, occupational sickness or disease, or death of an employee or any other person;

(3) Claims customarily covered under personal injury liability coverage;

(4) Claims other than to the work itself arising out of an injury to or destruction of tangible property, including the loss of use resulting therefrom;

(5) Claims arising out of ownership, maintenance or use of any motor vehicle;

(6) Railroad protective liability coverage in the event the contract involves work to be performed within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass or crossing.

B. **Worker's Compensation Insurance and Employer's Liability Insurance**. The Contractor shall provide applicable statutory Worker's Compensation Insurance with minimum limits as provided below covering all Contractor's employees, and in the case of any subcontracted work, the Contractor shall require the subcontractor similarly to provide Worker's Compensation Insurance for Subcontractor's employees.

The Contractor shall provide Employer's Liability Insurance with minimum limits as provided below placed with an insurance company authorized to write such insurance in all states where the Contractor will have employees located in the performance of this contract, and the Contractor shall require each Subcontractor similarly to maintain Employer's Liability Insurance on the Subcontractor's employees.

| **Coverage** | **Listing** | **Min Amt** | **Notes** |
|---|---|---|---|
| **Worker's Comp.** | | | |
| | State | Statutory | |
| | Applicable Federal | Statutory | |
| **Employer's Liability** | | | |
| | Bodily Injury by accident | $500,000 | each accident |
| | Bodily Injury by disease | $500,000 | each employee |
| | Bodily Injury | $500,000 | policy limit |

**C. Commercial General Liability Insurance.**

(1) The Contractor shall provide Commercial General Liability Insurance in a policy form providing no less comprehensive and no more restrictive coverage than provided under the ISO® form CG00010798 or newer with standard exclusions "a" through "o" and with minimum limits as provided below. Any other exclusions that operate to contradict or materially alter the standard exclusions shall be specifically listed on the certificate of insurance and shall be subject to the prior written approval of the City Attorney.

| Coverage | Min Amt | Notes |
|---|---|---|
| General | $2,000,000 | Aggregate |
| Products and Completed Operations | $2,000,000 | Aggregate |
| Personal and Advertising Injury | $1,000,000 | |
| Each Occurrence | $1,000,000 | |
| Fire Damage Limit | $ 100,000 | any one fire |
| Medical Damage Limit | $ 10,000 | any one person |

(2) The required Commercial General Liability Insurance shall also include the following:

- Coverage for all premises and operations
- Endorsement to provide the general aggregate per project endorsement
- Personal and advertising injury included
- Operations by independent contractors included
- Contractual liability coverage included
- X.C.U. Coverage including coverage for demolition of any building or structure, collapse, explosion, blasting, excavation and damage to property below the surface of ground.
- Any fellow employee exclusions shall be deleted
- Coverage shall not contain an absolute pollution exclusion, and applicable remaining coverage shall apply for pollution exposures arising from products and completed operations.
- Coverage for products and completed operations maintained for duration of work and shall be maintained for a minimum of three years after final acceptance under the Contract or the warranty period for the same whichever is longer, unless modified in any Special Provisions.
- Contractual Liability coverage shall include contractually assumed defense costs in addition to any policy limits.

(3) If work is to be performed within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass or crossing, Railroad Contractual Liability Endorsement (ISO® form CG24170196 or newer).

(4) City may at its sole option, and in lieu of being additional insured on the Contractor's policy, by written requirement in the Special Provisions or by written change order, require Contractor to provide a separate Owner's Protective liability policy. The premium cost to obtain such insurance shall be as paid as provided in the Special Provision or change order, with any related cost savings as reasonably determined by the City being reimbursed or paid to the City.

**D. Vehicle liability insurance coverage.**

- The Contractor shall provide reasonable insurance coverage for all owned, non-owned, hired and leased vehicles with specific endorsements to include contractual liability coverage and delete any fellow employee exclusion.

- If specifically required in the Special Provisions, the required coverage shall also include an endorsement for auto cargo pollution (ISO® form CA 99 48).

**E. Railroad Protective Liability.** If work is to be performed within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass or crossing or otherwise required by the Special Provisions or applicable requirements of an affected railroad, the Contractor shall provide Railroad Protective Liability Insurance naming the affected railroad/s as insured with

minimum limits for bodily injury and property damage of $2,000,000 per occurrence, $6,000,000 aggregate, or such other limits as required in the Special Provisions or by the affected railroad. The original of the policy shall be furnished to the railroad and a certified copy of the same furnished to the City Attorney's office prior to any related construction or entry upon railroad premises by the Contractor or for work related to the Contract.

F. **Umbrella or Excess Insurance.** The Contractor shall provide Umbrella or Excess insurance coverage with minimum coverage limits of $3,000,000 each occurrence and aggregate.

G. **City included as Insured on Contractor's Policy – Endorsements required.** The Contractor shall provide adequate written documentation, including applicable ACORD certificates, declarations pages or other acceptable policy information demonstrating that the City is included as an additional insured along with the Contractor with respect to all of the coverages required in this "Section 2A Insurance Requirements," except for applicable Worker's Compensation coverage, to include all work performed for the City and specifically including, but not limited to, any liability caused or contributed to by the act, error, or omission of the Contractor, including any related subcontractors, third parties, agents, employees, officers or assigns of any of them. The documentation or endorsement shall specifically include the city as an additional insured for purposes of Products and Completed Operations. The inclusion of the City as additional insured shall be for coverage only on a primary basis for liability coverage, and no coverage shall contain a policy or other restriction or attempt to provide restricted coverage for the City, whether on an excess, contributory or other basis regardless of any other insurance coverage available to the City.

**3. CONTRACTOR'S INDEMNITY – CONTRACTUAL LIABILITY INSURANCE**

A. To the same extent as specified for minimum coverage requirements in Section 2 above, the required insurance shall include contractual liability coverage to include indemnification and hold harmless agreements and provisions in the related Contract Documents, specifically including the following provision:

(1) To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless the City, its officers, agents, employees, volunteers and consultants from and against any and all claims, damages, losses, costs, and expenses, including but not limited to attorney's fees and costs arising out of or related to the Contract or the Contractor's activities, errors, or omissions related to the Contract including liabilities or penalties imposed by applicable, law, rule or regulation in connection therewith; provided that such claims, damages, losses, costs, and expenses, including but not limited to attorney's fees and costs:

- is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use therefrom, and

- is caused in whole or in part by any act or omission of the Contractor, any subcontractor, agent, officer, employee, or assigns of the same or by anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in whole or in part by a party indemnified hereunder.

(2) Such indemnification shall not be construed to negate, abridge, limit or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this section.

B. In any and all claims by any employee (whether an employee of the Contractor or subcontractor, or their respective agents or assigns by anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable as an employer) in whole or in part against the City, its officers, agents, employees, volunteers or consultants, the above indemnification shall not be limited in any way by the amount of damages, compensation, benefits or other contributions payable by or on behalf of a the employer under Worker's Compensation statutes, disability benefit acts, or any other employee benefit or payment acts as the case may be.

C. The obligations of indemnification herein shall not include or extend to:

(1) Any outside engineer's or architect's professional errors and omissions involving the approval or furnishing of maps, drawings, opinions, reports, surveys, change orders, designs or specifications within the scope of professional services provided to the City and related to the Contract; and

(2) Any claims arising out of the negligence of the City to the extent the same is the sole and proximate cause of the injury or damage so claimed.

D. In the event of any litigation of any such claims shall be commenced against the City, Contractor shall defend the same at Contractor's sole expense upon notice thereof from the City. Contractor shall notify the insuring company that the City reserves and does not waive any statutory or governmental immunity and neither Contractor, nor Contractor's counsel whether employed by Contractor or by an insurer on behalf of the Contractor shall waive such defenses or enter into any settlement or other disposition requiring waiver of any defenses or immunity of the City without the express written consent of the City.

**4. CONTRACTOR'S INSURANCE FOR OTHER LOSSES**.

A. Contractor shall assume full responsibility for all loss or damage from any cause whatsoever to any tools owned, rented or used in connection with the Contract including any tools, machinery, equipment, storage devices, containers, sheds, temporary structures, staging structures, scaffolding, fences, forms, braces, jigs, screens, brackets, vehicles and the like owned or rented by Contractor, or Contractor's agents, subcontractors, suppliers, or employees.

B. In connection with the above, Contractor shall cause or require any applicable insurance related to physical damage of the same to provide a waiver of a right of subrogation against the City.

**5. NOTIFICATION IN EVENT OF LIABILITY OR DAMAGE.**

A. The Contractor shall promptly notify the City in writing and provide a copy of all claims and information presented to any of Contractor's insurance carrier/s upon any loss or claim or upon any occurrence giving rise to any liability or potential liability related to the Contract or related work. The notice to the City shall include pertinent details of the claim or liability and an estimate of damages, names of witnesses, and other pertinent information including the amount of the claim, if any.

B. In the event the City receives a claim or otherwise has actual knowledge of an any loss or claim arising out of the Contract or related work and not otherwise known to or made against the Contractor, the City shall promptly notify the Contractor of the same in writing, including pertinent details of the claim or liability; Provided, however the City shall have no duty to inspect the project to obtain such knowledge, and provided further that the City's obligations, if any, shall not relieve the Contractor of any liability or obligation hereunder.

**6. PROPERTY INSURANCE/ BUILDER'S RISK.**

A. The Contractor shall provide property insurance (a/k/a Builder's Risk or installation Floater) on all Projects involving construction or installation of buildings or structures and other projects where provided in the Special Provisions. Such insurance shall be provided in the minimum amount of the total contract sum and in addition applicable modifications thereto for the entire work on a replacement cost basis. Such insurance shall be maintained until the City completes final acceptance of the work as provided in the Contract. Such insurance shall be written and endorsed, where applicable, to include the interests of the City, Contractor, Subcontractors, Sub-subcontractors in the related work. The maximum deductible for such insurance shall be $5,000 for each occurrence, which deductible shall be the responsibility of the Contractor. Such insurance shall contain a "permission to occupy" endorsement.

B. All related Property Insurance shall be provided on a “Special Perils” or similar policy form and shall at a minimum insure against perils of fire including extended coverage and physical loss or damage including without limitation or duplication of coverage: flood, earthquake, theft, vandalism, malicious mischief, collapse, and debris removal, including demolition whether occasioned by the loss or by enforcement of applicable legal or safety requirements including compensation or costs for City’s related costs and expenses (as owner) including labor required as a result of such loss.

C. All related Property Insurance shall include coverage for falsework, temporary buildings, work stored off-site or in-transit to the site, whether in whole or in part. Coverage for work off-site or in-transit shall be a minimum of 10% of the amount of the policy.

D. The Contractor’s Property Insurance shall be primary coverage for any insured loss related to or arising out of the Contract and shall not be reduced by or coordinated with separate property insurance maintained by the City.

# CONTRACT DOCUMENTS

## C I T Y  O F  L I N C O L N
## N E B R A S K A

**“Fire Station Vehicle Exhaust**
**Station 12”**
**“07-200”**

**“Contractor”**
**“Address”**
**“CSZ”**

**C I T Y O F L I N C O L N , N E B R A S K A**
**C O N T R A C T A G R E E M E N T**

THIS CONTRACT, made and entered into this _____ day of_____2007, by and between **"Contractor", "address", "CSZ"** hereinafter called contractor, and the City of Lincoln, Nebraska, a municipal corporation, hereinafter called the City.

WITNESS, that:

WHEREAS, the City has caused to be prepared, in accordance with law, Specifications, Plans, and other Contract Documents for the Work herein described, and has approved and adopted said documents and has caused to be published an advertisement for and in connection with said Work, to-wit:

"Proj Name", "#"
and,

WHEREAS, the Contractor, in response to such advertisement, has submitted to the City, in the manner and at the time specified, a sealed Proposal in accordance with the terms of said advertisement; and,

WHEREAS, the City, in the manner prescribed by law has publicly opened, read aloud, examined, and canvassed the Proposals submitted in response to such advertisement, and as a result of such canvass has determined and declared the Contractor to be the lowest responsible bidder for the said Work for the sum or sums named in the Contractor's Proposal, a copy thereof being attached to and made a part of this Contract;

EQUAL EMPLOYMENT OPPORTUNITY: In connection with the carrying out of this project, the contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, disability, age or marital status. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, ancestry, disability, age or marital status. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other compensation; and selection for training, including apprenticeship.

NOW, THEREFORE, in consideration of the sums to be paid to the Contractor and the agreements herein contained, the Contractor and the City have agreed and hereby agree as follows:

The Contractor agrees to (a) furnish all tools, equipment, supplies, superintendence, transportation, and other construction accessories, services, and facilities; (b) furnish all materials, supplies, and equipment specified to be incorporated into and form a permanent part of the complete work; (c) provide and perform all necessary labor in a substantial and workmanlike manner and in accordance with the provisions of the Contract Documents; and (d) execute construct, and compete all Work included in and covered by the City's award of this Contract to the Contractor, such award being based on the acceptance by the City of the Contractor's Proposal, or part thereof, as follows:

The City agrees to pay to the Contractor for the performance of the Work embraced in this Contract, the Contractor agrees to accept as full compensation therefor, the following sums and prices for all Work covered by and included in the Contract award and designated above, payment thereof to be made in the manner provided by the City:

"Amt"

# C O N T R A C T  A G R E E M E N T

The Work included in this Contract shall begin as soon as possible from date of executed contract. The completion shall be _____.

GUARANTEE:

A performance bond in the full amount of the contract shall be required for all construction contracts. This bond shall remain in effect during the guarantee period as stated in the specifications.. Once the project is completed, the contractor may submit a maintenance bond in place of the performance bond.

The Contract Documents comprise the Contract, and consist of the following:

1. The Instructions to Bidders
2. The Accepted Proposal
3. The Contract Agreements
4. The Specifications
*5. The City of Lincoln Standard Specifications for Municipal Construction
   a. General Conditions
   b. General Specifications
   c. Construction & Materials Specifications
** 6. The Plans (including the Schedule of Approximate Quantities)
7. The Construction Bonds
8. The Special Provisions

* If project includes paving, water, sewer, sidewalk, lighting or traffic signal work, the City of Lincoln Standard Specifications for Municipal Construction will apply, which are on file in the office of the City Clerk. Copies may be obtained at the Office of the City Engineer.

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** The following is an enumeration of the Plans, which are entitled: “#”, “Proj Name”

These Contract Agreements, together with the other Contract Documents herein above mentioned, form this Contract, and the are as fully a part of the Contract as if hereto attached or herein repeated.

The Contractor and the City hereby agree that all the terms and conditions of this Contract shall by these presents be binding upon themselves, and their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

IN WITNESS WHEREOF, the Contractor and the City do hereby execute this contract.

**EXECUTION BY THE CITY OF LINCOLN, NEBRASKA**

ATTEST:

_____
City Clerk

CITY OF LINCOLN, NEBRASKA

_____
Mayor

Approved by Executive or No._____
dated _____

**EXECUTION BY CONTRACTOR**

IF A CORPORATION:

_____
Name of Corporation

ATTEST:

_____(SEAL)
Secretary

_____
(Address)

By:_____
Duly Authorized Official

_____
Legal Title of Official

IF OTHER TYPE OF ORGANIZATION:

_____
Name of Organization

_____
Type of Organization

_____
(Address)

By:_____
Member

By:_____
Member

IF AN INDIVIDUAL:

_____
Name

_____
Address

_____
Signature

COMMENTARY TO ACCOMPANY CONSTRUCTION BONDS

A. GENERAL INFORMATION

There are two types of construction bonds that are required by statutes for public work in many jurisdictions and are widely used for other projects as well.

Construction Performance Bond
Construction Payment Bond

The Construction Performance Bond is an instrument that is used to assure the availability of funds to complete the construction.

The Construction Payment Bond is an instrument that is used to assure the availability of sufficient funds to pay for labor, materials and equipment used in the construction. For public work the Construction Payment Bond provides rights of recovery for workers and suppliers similar to their rights under the mechanics lien laws applying to private work.

The objective underlying the re-writing of construction bond forms was to make them more understandable to provide guidance to users. The intention was to define the rights and responsibilities of the parties, without changing the traditional rights and responsibilities that have been decided by the courts. The new bond forms provide helpful guidance regarding time periods for various notices and actions and clarify the extent of available remedies.

The concept of pre-default meeting has been incorporated into the Construction Performance Bond. All of the participants favored early and informal resolution of the problems that may precipitate a default, but some Surety companies were reluctant to participate in pre-default settings absent specific authorization in the bond form.

The responsibilities of the Owner and the options available to the Surety when a default occurs are set forth in the Construction Performance Bond. Procedures for making a claim under the Construction Payment Bond are set forth in the form.

EJCDC recommends the use of two separate bonds rather than a combined form. Normally the amount of each bond is 100 percent of the contract amount. The bonds have different purposes and are separate and distinct obligations of the Surety. The Surety Association reports that the usual practice is to charge a single premium for both bonds and there is no reduction in premium for using a combined form or for issuing one bond without the other.

B. COMPLETING THE FORMS

Bonds have important legal consequences; consultation with an attorney and a bond specialist is encouraged with respect to federal, state and local laws applicable to bonds and with respect to completing or modifying the bond forms.

Both bond forms have a similar format and the information to be filled in is ordinarily the same on both bonds. If modification is necessary, the modifications may be different.

The bond forms are prepared for execution by the Contractor and the Surety. Evidence of authority to bind the Surety is usually provided in the form of a power of attorney designating the agent who is authorized to sign on behalf of the Surety. The power of attorney should be filed with the signed bonds.

Each bond must be executed separately since they cover separate and distinct obligations.

Preferably the bond date should be the same date as the contract, but in no case should the bond date precede the date of the contract.

To accompany the Construction Performance Bond (EJCDC No.1910-28A) and the Construction Payment Bond (EJCDC No. 1910-28B)
Prepared by the Engineers' Joint Contract Documents Committee

CONSTRUCTION PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

| CONTRACTOR (Name and Address): | SURETY (Name and Principal Place of Business): |
|---|---|

Owner (Name and Address):
City of Lincoln
555 South 10th St.
Lincoln, NE 68508

CONSTRUCTION CONTRACT
Date:
Amount:

Description (Name and Location):

BOND
Date:
Amount:
Modifications to this Bond Form:

| CONTRACTOR AS PRINCIPAL | | SURETY | |
|---|---|---|---|
| Company: | (Corp. Seal) | Company: | (Corp.Seal) |
| Signature:_____ | | Signature:_____ | |
| Name and Title: | | Name and Title: | |

EJCDC NO. 1910-28a (1984 Edition)
Prepared through the joint efforts of The Surety Assoc. of America. Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

   3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default and

   3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Sub-paragraph 3.1; and

   3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

   4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract, or

   4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors: or

   4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default, or

   4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

      1. After investigation, determine the amount for which it may be liable to the Owner and as soon as practicable after the amount is determined tender payment therefor to the Owner; or

      2. Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4 and the Owner refuses payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

   6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; an d

   6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related sub-contracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a satutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.

    12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

    12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

    12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

CONSTRUCTION PAYMENT BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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CONTRACTOR (Name and Address):

SURETY (Name and Principal Place Of Business):

Owner (Name and Address):

City of Lincoln
555 South 10th St.
Lincoln, NE 68508

CONSTRUCTION CONTRACT
Date:
Amount:
Description (Name and Location):

BOND
Date (Not earlier than Construction Contract Date):
Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

SURETY
Company: (Corp. Seal)

Signature: _____
Name and Title:

Signature: _____
Name and Title:

EJCDC NO. 1910-28B (1984 Edition)
Prepared through the joint efforts of The Surety Assoc. of America. Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:

   2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

   2.2 Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:

   4.1 Claimants who do not have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof to the Owner, stating that a claim is being made under this Bond and with substantial accuracy the amount of the claim.

   4.2 Claimants who do not have a direct contract with the Contractor:

   1.Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed, and

   2.Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

   3.Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

   6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

   6.2 Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond.

   By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to the funds for the completion of the work.
9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
11. No suite or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.1 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
15. DEFINITIONS

   15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials, or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

   15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

   15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY - NAME, ADDRESS AND TELEPHONE)
AGENT OR BROKER: OWNER'S REPRESENTATIVE (ARCHITECT, ENGINEER OR OTHER PARTY)

**Certified Statement Pursuant to Neb. Rev. Stat. § 77-1323**

§ 77-1323 *Every person, partnership, limited liability company, association, or corporation furnishing labor or material in the repair, alteration, improvement, erection, or construction of any public improvement shall furnish a certified statement to be attached to the contract that all equipment to be used on the project, except that acquired since the assessment date, has been assessed for taxation for the current year, giving the county where assessed.*

Pursuant to Neb. Rev. Stat. § 77-1323, I, _____, do hereby certify that all equipment to be used on City Project/Specification No. _____, except that equipment acquired since the assessment date, has been assessed for taxation for the current year, in _____ County, Nebraska.

DATED this ____ day of _____, 2007.

By: _____

Title:_____

STATE OF NEBRASKA )
)ss.
COUNTY OF _____ )

On _____, 2007, before me, the undersigned Notary Public duly commissioned for and qualified in said County, personally came _____, to me known to be the identical person, whose name is affixed to the foregoing instrument and acknowledged the execution thereof to be his voluntary act and deed.

Witness my hand and notarial seal the day and year last above written.

_____
Notary Public

(S E A L)